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THE INDUSTRIAL REORGANIZATION ACT

HEARINGS
BEFORE THE
SUBCOMMITTEE ON
ANTITRUST AND MONOPOLY
OF THE
COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE
NINETY-THIRD CONGRESS
SECOND SESSION
ON
S. 1167
PART 6
The Communications Industry

JULY 9, 30, AND 31, 1974

Printed for the use of the Committee on the Judiciary
(Pursuant to S. Res. 255, Section 4)



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WASHINGTON : 1974

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THE INDUSTRIAL REORGANIZATION ACT (S. 1167)

(The Communications Industry)

TUESDAY, JULY 9, 1974

U.S. SENATE,
SUBCOMMITTEE ON ANTITRUST AND MONOPOLY OF THE
COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 2228, Dirksen Senate Office Building, Hon. Philip A. Hart (chairman of the subcommittee), presiding.

Present: Senators Hart and Hruska.

Staff present: Howard E. O'Leary, Jr., chief counsel; Gerald Hellerman, special financial adviser; Janice Williams, chief clerk; Peter N. Chumbris, minority chief counsel; and Charles E. Kern II, minority counsel.

Senator HART. The committee will be in order.

Our first witness today is the Director, Office of Telecommunications Policy, Executive Office of the President.

I am advised that Senator Hruska is attending an Appropriations Committee meeting. If it is possible he will join us.

The committee will proceed.

The subcommittee welcomes Mr. Clay T. Whitehead.

STATEMENT OF CLAY T. WHITEHEAD, DIRECTOR, OFFICE OF TELECOMMUNICATIONS POLICY, EXECUTIVE OFFICE OF THE PRESIDENT, ACCOMPANIED BY JOHN EGER, DEPUTY DIRECTOR

Mr. WHITEHEAD. Thank you, Mr. Chairman.

I have a statement that I hope is not too long. I would like to read it.

I welcome this opportunity, Mr. Chairman, to be here with you. I have with me John Eger, the Deputy Director of OTP. We are happy to have this opportunity to discuss S. 1167 and the structure of the Nation's domestic communications industry. At the outset, I should point out that when I say "communications," I am referring to all segments of our electronic communications industry with the exception of broadcasting. A discussion such as this is particularly appropriate at the present time. Unlike almost every other country in the world, the United States has a reliable, widespread, low-cost communications infrastructure. In that sense, one of the major goals of the 1934 Communications Act has been achieved.

But the rapid innovation and decreasing cost of electronics has now opened a host of new ways to use and augment this basic communications capability. We must therefore seriously inquire where we are to go in the future and how we will get there. Before discussing the specific problems confronting us today with regard to competition in the field of communications I believe it would be useful to touch briefly on the development of common carrier communications in this country.

The subcommittee has heard a great deal about the history of the Bell System, its size, and its vertical and horizontal integration, and I do not want to take a lot of time with a history or description of A.T. & T. Suffice it to say that Bell is where it is today for two principal reasons. First, like most public services requiring the installation of pipelines, cable, and conduits in local geographic areas, telephone service has the characteristics of natural monopoly in each community. Second, Bell's early telephone patent position led to its rapid ascendancy in the field of telephony and made it a prime candidate for acquiring other telephone systems in the early days of the industry.

These combined factors had the effect of insulating the Bell System for competition in the provision of switched telephone service. A.T. & T. is uniquely large in American business: It employs some 11½ percent of our labor force, uses 10 percent of the new capital investment each year, and has revenues of over \$20 billion annually.

You have also heard a lot about the history of communications regulation, so I do not want to go into great detail on that subject except to note that in the early days of the telephone industry regulation was not a significant problem. I suppose that this was due in large part to the fact that in the era when communications services were synonymous with public telephone and telegraph service the national policy of universal service at reasonable rates was entirely in accord with Bell's own objectives. Indeed, title II of the 1934 Communications Act set the legal framework for FCC common carrier regulation around the assumption that telephone and telegraph service were the only feasible communications services.

It is important to emphasize that up until about the 1940's common carrier communications services consisted almost exclusively of telephone and telegraph, both of which were characterized by natural monopoly features. But the advent of new technologies—new developments in radio communications, microwave transmissions, solid state circuitry, and so on—began to provide us new methods of communication. It became possible to send a message electronically from one point to another having to go through the switched telephone network; and it became possible to see the telephone lines for a variety of new communications purposes. These new services, made possible by advances in electronics technology, do not have natural monopoly characteristics, and it became apparent that there was no need for all communications services and equipment to be provided by a single supplier such as the telephone company.

This was recognized as long ago as 1949, when the FCC allocated frequencies for mobile radio service to various private groups as

well as to companies not affiliated with the telephone carriers for the provision of mobile radio services to the public. Ten years later, in 1919, the Commission made point-to-point microwave frequencies available to private companies having large communications requirements. More recently the FCC has decided to permit so-called specialized common carriers to provide city-to-city private line services and to allow domestic satellite communications services to be provided by non-Bell entrants. Again, this was in recognition of the fact that there was no need for having any and all communications services provided by a single company.

In the equipment area the telephone industry originally developed as a complete two-way communications service; and the telephone company historically supplied its customers with all elements needed for system function, including terminal equipment. As I mentioned earlier, the integration of service and equipment was based historically on the original Bell patents; and for years the telephone tariffs prohibited the attachment of any non-Bell equipment to the transmission lines. This prohibition has been challenged with increasing frequency since the 1950's, as customers began to discover that newer, less-expensive equipment could be used with telephone lines; and the FCC, supported by the courts, has forced Bell to make some important exceptions to this rule.

None of these decisions to adapt the Communications Act to new technologies and new services seems remarkable in retrospect, but the difficulty and the slowness with which they were made show how the regulatory apparatus of the 1930's has come to be a major impediment to the natural growth of new communications services.

All of these decisions of the FCC and the courts are expressions of the fundamental public policy that customers are more likely to get the services and products they want, and get them more quickly and at lower cost, if they are available from diverse sources. We have traditionally viewed monopoly as an exception to the general rule of competitive free enterprise, and the Supreme Court and the Congress have repeatedly stressed the broad public interest benefits of antimonopoly policies. Monopolistic industry structure has been sanctioned historically only in key public services where necessary and where justified by the presence of natural monopoly characteristics. In short, the burden has been on the monopolist to justify his monopoly status, and regulation has been directed at protecting customers and other businesses from the monopoly.

But a curious and perverse twist has occurred in the communications industry. The Communications Act vested the FCC with regulatory jurisdiction over all interstate electronic communications. This was perfectly acceptable in 1934 when communications meant telegraph and switched telephone services, both of which were and are characterized by conditions that justify a monopolistic industry structure and, hence, extensive economic regulation. But with all communications services by statute under a regulatory umbrella affirmative authorization is required before any new service can be offered—to a few desirous customers or to the general public—by a new entrant.

The FCC has thus been placed in the posture of "permitting competition," a posture that is entirely antithetical to our basic traditions. The burden and the benefit of regulation have shifted: The would-be provider of a new communications service, rather than the monopolist, is now required to justify his existence, and the monopolist, rather than the would-be customer of that new service, receives the benefits of the regulatory machinery.

We have had a surge in innovation and cost reduction in electronics; already it is finding its way into consumer products and business services. But the public benefit will be cut short if our regulatory mechanisms prevent these electronic devices from being used in electronic interstate commerce over communications lines. The natural pressure from customers and would-be suppliers for competition with monopoly carriers is, under the existing provisions of title II of the Communications Act, turning the Government into a cartel manager, apportioning markets among the "competitors." Indeed, we are even seeing the perverse phenomenon of many new entrants seeking regulated status in order to secure the protections and benefits that such status accords. In short, the 1934 regulatory apparatus works reasonably well for the purpose for which it was designed, namely, regulating basic telephone service; but that same regulatory apparatus has become a barrier to competition and innovation required for the future direction of communications.

The end result is that innovation is discouraged; and customer needs, especially small-market needs, are not translated into incentives for new services. The major expense of developing a new communications service for the public is often the legal expense of fighting established carriers in the regulatory process for permission to offer the service to would-be customers, rather than the development of the service and equipment itself.

What, then, should be the fundamental principles upon which our future communications policy should be based? I believe there are four basic principles that should apply:

First, the public-utility monopoly in conventional telephone service is still appropriate today. The natural monopoly conditions that originally dictated this industry structure remain unchanged, and no one suggests that basic local telephone service be provided on anything but a monopoly basis. Indeed, thanks to the Bell System and to the regulatory policies of the past the United States has a universal, low-cost telephone service that is unparalleled throughout the world.

Second, the monopoly concept should not be extended to other communications services. As I have indicated, we have traditionally viewed monopoly as the exception, not the rule, and unless the would-be monopolist or the public can demonstrate a special public policy consideration that justifies monopoly, it should not be permitted. Communications was once a homogeneous service that could properly be viewed as a public utility. But this is no longer the case. Most everyone wants or needs a telephone; but not everyone wants a private branch exchange or access to data processing equipment, or a private line between two cities, or a phone in his car, or any

of the special capabilities which electronic technology can make available to particular users, packaged to meet their particular needs. At present there does not appear to be any service other than the local public telephone service where monopoly rather than competition would best serve the public interest.

Third, any new entrant should be free to offer any service except conventional public telephone service. In the absence of a showing of need to protect the monopolist from competition there is no public policy basis for prohibiting customers and suppliers from doing business with one another. Indeed, industry innovations to meet a wide variety of customer needs and interests will take place only if the customer is free to seek out whichever company offers him the best service suited to his needs and means.

Fourth, any telephone customer should be allowed to buy and use any communications device over the telephone lines. The natural monopoly features inherent in local switched telephone service relate to the installation lines and switching facilities; they are not present in the production and sale of terminal equipment. There are no technical or economic considerations which dictate that a customer should be prohibited from acquiring terminal equipment from whatever source he chooses to use with his telephone line to suit his particular need. Of course, the consumer should pay for his access to the line and for the demands he places on the switching and transmission facilities of the telephone company. But what he does with the communications capability he pays for is his business—just as what he does with his water, his electricity, and his gas is his business.

The established carriers have taken issue with the last three of these four principles, and I would like briefly to address their arguments. Regarding the second principle limiting monopoly to public telephone service, the carriers have variously and from time to time both welcomed and eschewed competition in nontelephone services.

Most recently, some of them have called for a moratorium on new entry, urging strongly that competition in communications should be permitted only if it can be shown that no adverse impact will result.

This, of course, places the would-be competitor in the impossible position of having to prove the negative. But more importantly, what these carriers are saying in effect is that competition, rather than monopoly, has to be justified; this flies squarely in the face of the fundamental presumptions of our free enterprise system, and is clearly contrary to the FCC and court decisions to which I have referred, establishing competition as the appropriate environment for nontelephone communications service.

It is certainly the American way for businessmen to seek pre-eminence in their businesses and seek to outdo their competition; and the telephone companies, including A.T. & T., are no exception. But the whole basis for our free enterprise system is that business success should be won competitively in the marketplace by providing the goods and services that customers want. It is unbecoming for a company the size and the stature of A.T. & T. to use its legal, political, and economic power to seek to extend its monopoly by

governmental fiat into areas where monopoly is not called for. In my judgment, the Government cannot let such an effort go unnoticed or unchecked.

There is little doubt that the recent aggressive campaign by A.T. & T. and other telephone companies to declare a moratorium on competition will have a deleterious effect on the development of new communications services by slowing the infusion of capital and raising the legal fees required to challenge the established carriers in the courts and at the FCC. It would be a wiser and more constructive course for these established carriers to promote and facilitate all kinds of communications—expanding their business by expanding the use of their facilities.

With regard to the third principle—that any new entrant should be free to provide any communications services other than public telephone service—it has been suggested that competition will cause a departure from nationwide rate averaging. The allegation is that competitors in the private line, intercity communications market will seek to serve only low-cost, high-density routes between urban centers which until now have subsidized other routes; but if this is true I would simply say that it is not clear that there is or has been a national policy encouraging business users in urban centers to subsidize business users elsewhere. The policy of nationwide rate averaging may well continue to be appropriate within the standard public telephone service. However, it is inappropriate to extend that concept beyond conventional telephone service, and the argument that competition will destroy telephone rate averaging is just not true.

It is also alleged that business users of communications services subsidize residential telephone users; and that competition in private-line and business terminal equipment markets would destroy that subsidy. Again, assuming the subsidy exists, I question whether its elimination would have any noticeable impact on the rates paid by residential users, particularly since the competitive markets involved have accounted for only about 5 percent of total Bell System revenues.

Consumers end up paying for most of the service anyway, as business users pass on their higher communications costs in the form of higher prices for the goods and services they offer to the public. Moreover, such rate averaging gives the telephone companies incentive to focus their new products and services on the more lucrative, higher profit area of service to businesses rather than residential users.

In the final analysis I do not believe that these subsidies, if in fact they exist, are so significant or desirable as to warrant denying the public the benefits that a competitive environment will make possible.

Finally, as to the fourth point on the interconnection of non-Bell equipment into the Bell network, it is said that this practice will result in "harm to the network." I cannot conclude that this problem is really significant. How is it, for example, that a radio can be moved from one State to another and still work despite the fact that no one has a national monopoly on either the supply of electricity

or the manufacture of radios? How is it that telephone users in those areas of the country served by non-Bell telephone companies can call anywhere in the country without harming the network? There are a number of mechanisms, formal and informal, by which standards can be agreed upon that will protect the telephone network from harm. These standards are very simple, technically, and are well within the capability of our sophisticated electronics industry.

In any event, Government, through the FCC, the National Bureau of Standards, and the National Science Foundation, is well equipped to assist the industry.

The inescapable conclusion, Mr. Chairman, is that competition and monopoly must coexist in our communications industry. In such an environment the major policy issues are: (1) which nonmonopoly services should the telephone companies be allowed to offer, and on what basis; and (2) what are the responsibilities of monopoly telephone companies in facilitating the use of their lines?

One obvious approach is simply to exclude Bell from offering any other than switched public telephone service, but I believe this to be an unacceptable course. The Bell System has given us the finest, most modern telephone system in the world, an accomplishment of which it can justifiably be proud. We should be most reluctant to deprive the Nation of the productive potential of such an organization. Bell, like any other telephone company, should be allowed to compete in the offering of any nontelephone service where compelling public policy reasons do not dictate otherwise.

Once it is found that there are no such compelling reasons the principal regulatory problems involve the possibility of purposeful or inadvertent abuse of monopoly power to gain unfair advantages in the competitive sphere. One such problem is the potential for cross-subsidy—the pricing of competitive services below cost and making up the difference by charging higher rates for monopoly services. The identification of cross-subsidies is not easy, involving conflicting methods of cost allocation and problems of availability of and access to proprietary cost information. The FCC, for example, has been considering the pricing policies for the established common carriers for at least the past 6 years, and no definitive results have yet been forthcoming.

The Communications Act itself compounds the difficulty of the cross-subsidy problem. For example, the Commission may lawfully suspend a tariff only for 90 days while it investigates the reasonableness of the new rates, but after the 90-day period the tariff automatically goes into effect. If the Commission has not completed its investigation by that time it may issue an “accounting order” whereby revenues under the new tariff are subject to refund to customers if the rates are found to be unreasonably high. What may have been an appropriate procedure for protecting the public against unreasonably high rates for monopoly services is of no value in protecting competitors against lost customers if the rates are found to be set below costs or if inappropriate costing methods have been used.

A second major problem that arises when the telephone company participates in competitive markets is its opportunity to restrict the use of its monopoly telephone network by its competitors.

This subcommittee has heard charges and countercharges regarding access by specialized common carriers to the local loop service and discriminatory practices directed against the users of non-Bell terminal equipment. It would be inappropriate for me to comment on the merits of any of these allegations, except to say that liberal, nondiscriminatory interconnection with and access to the switched telephone network is feasible and essential. Moreover, there appears to be no legitimate reason for restricting the shared use and resale of the telephone company's services; entrepreneurs who wish to develop new markets or facilitate the use of communications services by serving as brokers should be permitted to do so. Anticompetitive practices that restrict access should be dealt with vigorously.

The thrust of my testimony to this point, Mr. Chairman, is that competition can, and indeed must, work in the communications business if the American public is to secure the benefits of new services and lower costs.

Outmoded regulatory mechanisms that protect monopoly rather than constrain it cannot be allowed to carry over into the assumption that it is somehow "natural" for all communications to be a monopoly. The problems posed by the existence of a monopolist in a competitive atmosphere are enormously complex, but this should not cause us to abandon the effort to accommodate the two. As I mentioned earlier, the advantages offered by Bell's participation in some markets are significant; and the task that confronts us now is to find new ways to insure that Bell's participation is fair and equitable.

It would be easy, as many have done, to ascribe the problems that confront us today to inept regulators and greedy businessmen; but that would be incorrect and unfair and would mislead us. In my judgment the FCC and the courts have done a commendable job trying to fit the 1934 Communications Act to the needs of a more modern economy; and the businessmen of A.T. & T. are among the most competent and dedicated I have come in contact with. Rather, the problems stem from the fact that our regulatory mechanisms and the structure of our common carrier communications industry are becoming obsolete. We should seek to redefine the regulatory framework within which the FCC and the industry operate rather than cast blame on those who seek to do the best they can under an outdated regulatory framework.

This updating of our communications policy can be achieved in several ways. Title II of the Communications Act should be revised, systematically and thoroughly, to specify separate regulatory mechanisms for monopoly services and competitive services, and to establish firmly the principles I outlined earlier. Also, the antitrust laws should be enforced to ensure that regulatory mechanisms cannot become a haven for escape from competition. And the FCC should be encouraged by the Congress to continue to facilitate the availability of a wide range of communications capabilities.

Finally, a restructuring of the communications industry may be necessary if competition and monopoly are to coexist constructively. However, I do not believe that the measures contemplated by S. 1167 are appropriate. Specifically, I seriously question the advisability of establishing yet another Government agency such as the Industrial Reorganization Commission that is contemplated by this bill to deal with these problems. We should first streamline and modernize our existing regulatory machinery before we add additional layers of regulatory control.

We in Government should reaffirm that in the absence of compelling unusual circumstances our economy will be based on competition, and insist that that policy be pursued. If we modernize our Communications Act and our regulatory process to conform to that policy we can expect that we will continue to have the finest telephone system in the world and will have, in addition, a host of other diverse communications services available to those in industry and the public who want or need them.

That concludes my statement. I will be pleased to answer questions you or members of the subcommittee may have.

Senator HART. Thank you very much, Mr. Whitehead. Your statement is a thoughtful and balanced one.

I say that even though you conclude on a note of disagreement with the precise form of the Industrial Reorganization Act.

I think you have reminded us of certain of the basic principles which we accept as desirable in our kind of economic society.

In the course of time we may have lost sight of these concepts as far as precise application of those principles go in this communications field.

I think you have assisted the committee greatly.

I can be a little more precise as to what I have in mind, as to what the general principles are and how they seem to have gotten lost in the evolution of the Bell System, which I agree with you is marvelous.

Undertaking to review it doesn't mean that I think it would be better if we had the "Mozambique Telephone Co."

You point out we traditionally view monopoly as an exception to the general rule of competitive free enterprise. Monopolistic industry structure has been sanctioned historically only in key public services where necessary and where justified by the presence of natural monopoly characteristics.

In short, the burden has been on the monopolist to justify his monopoly status. That is historically correct; and in my thoughts, absolutely right.

I think it wholly appropriate that periodically Congress asks any monopolist the questions: Are your thoughts as valid today as they were when you got your first patent? Can you carry the burden of proof today as you did a long time ago?

A curious and perverse twist has occurred in the communications industry. Then you remind us Congress got into this act in the 1930's with the Communications Act. We wind up with all communications services by statute under a regulatory umbrella, with affirm-

ative authorization required before any new service can be offered by any new entrant.

By the congressional action you are suggesting that the burden be borne for the proposition that competition would be desirable rather than contrarily that monopoly is justified.

That is a posture entirely antithetical to our basic provisions.

I agree with you. I agree when you go on to say—

The burden and the benefit of regulation have shifted to the would-be provider of a new communications service, rather than the monopolist, who is now required to justify his existence; and the monopolist, rather than the would-be customer of that new service, receives the protection of the regulatory machinery.

That may be comforting to the monopolist but it doesn't square with our principles, as you say.

I hope you would agree I have not, in paraphrasing you, distorted your viewpoint.

Mr. WHITEHEAD. Not at all.

Senator HART. Senator Hruska?

Senator HRUSKA. I have no questions, Mr. Chairman. This is a complicated subject to start out with.

Yesterday at 5:15 a copy of your statement came to my office, Mr. Whitehead. The rules of the committee are a little different than that.

Separate and apart from that, with the advance notice of these hearings and the opportunity to furnish a statement early enough so that it can be studied, read, cross-referenced, we have been denied that opportunity. That is to be greatly regretted because I think the hearings could very much benefit by such an analysis against which, when sitting where Senator Hart and I sit, we could propound questions and engage in discussions.

Mr. WHITEHEAD. I appreciate that, Senator Hruska. I apologize deeply for not meeting the committee's deadline.

Senator HRUSKA. For that reason, Mr. Chairman, I have no questions at this time. Frankly, after going over the statement, and if the occasion would be sufficiently pressing, I would like to suggest the committee call this witness back for such discussion as might ensue. As of now, I have no questions—for those reasons.

Senator HART. Mr. Hellerman?

Mr. HELLERMAN. Mr. Whitehead, you stated that the telephone company is enormous. We know there are problems raising the capital which A.T. & T. requires. The question is, How much longer do you think A.T. & T. can continue to expand and still be able to keep up with the basic telephone service?

Mr. WHITEHEAD. I don't know that I am qualified to answer that question, Mr. Hellerman.

I do not think the fact that A.T. & T. is so large and has such unique and extensive capital needs raises and directs questions about A.T. & T.'s ability in the foreseeable future to continue to expand to provide telephone service.

If it does raise questions, they are questions that the management of A.T. & T. should be addressing and discussing with this committee rather than me.

I think the size of Bell, furthermore, is no indication that Bell is per se somehow bad. I am not one of those who believes that just because a company has succeeded in providing worthwhile products that people buy in large quantities, with large numbers of dollars, means that they are somehow up to no good.

Narrowing the focus of your question, I think the one issue that looms out at us is whether Bell can continue to raise the capital it needs to provide basic telephone services while at the same time all the capital needed for all these competitive services is also funnelled through Bell. In other words, do we want to continue to foster an industry structure where one corporate organization is responsible for raising all the capital for all the various communications needs? I think the answer to that is no.

Mr. HELLERMAN. In the same light, do you think it is wise public policy to have one company being primarily responsible for such a basic service? You have 80 percent of the telephones in the country being serviced and provided by one company.

Mr. WHITEHEAD. As I said, it would be hard to find very many areas of our economy, particularly areas involving complicated and sophisticated technologies, that work as well as local telephone system does.

I see no problems with the scope of the Bell System insofar as the telephone service is concerned.

Mr. HELLERMAN. On page 9 of your statement, is what you are saying there simply that the telephone service has become more or less like other utilities, and that telephone companies should provide the service, or wire if you will, and it is up to the user to decide what he wants to attach to the other end and how much he wants to use the service and to pay accordingly?

Mr. WHITEHEAD. That is what I am suggesting.

Mr. HELLERMAN. On page 11: Are you saying there that the telephone company ought to be expanding the types of communications services which its network can handle and encourage companies to develop and market equipment and uses rather than attempting to be the sole provider of all available services?

Mr. WHITEHEAD. That's right. I think that with the very rapid growth of the communications business—it is growing much faster than our GNP, representing a larger and larger share of our economy—that there is more than enough business to go around.

What we ought to be doing, and what the communications business ought to be doing, is seeking all practicable ways to encourage the greater use of communications rather than squabbling about how the existing pie will be divided.

Mr. HELLERMAN. Do you believe this greater use of the network would mean additional revenues for Bell?

Mr. WHITEHEAD. I think that is clear. For example, every time we pick up a telephone, an extension telephone, every time a businessman uses his data set to send data over a telephone line, it results in more usage of the telephone system and therefore more revenues for the Bell System.

Mr. HELLERMAN. Do you believe that there are major impediments in having common carriers being required to use competitive bidding for acquiring communications equipment?

Mr. WHITEHEAD. I think there can be problems. We all know how complicated and how sophisticated communications systems can be. I think, perhaps more in this area than some other areas, there are legitimate arguments against competitive procurement.

On the other hand, OTP has recently put out a circular encouraging Government agencies to use commercial communications services insofar as possible; and we would like to see more use of competitive bidding.

Of course, that presumes the availability of diverse suppliers to compete in the bidding.

Mr. HELLERMAN. Are you aware of situations where the Government has used competitive bidding in obtaining communications equipment or services?

Mr. WHITEHEAD. Yes, of course, there are cases where the Government does use competitive bidding; more commonly in the case of equipment than for services, but also in the case of services.

Certain communications lines have been procured on a competitive basis. It seems to result in acceptable service at lower cost.

Mr. HELLERMAN. The reason I asked that question is I was informed that the Department of Defense, back in 1968 or 1969, decided to use competitive bidding on a transoceanic cable. At the time they were paying approximately \$22,000 per month per circuit. When they went the competitive bidding route the rate went down to \$8,000 per month.

Could you explain a little bit more concerning your statement that competition will not destroy rate averaging?

Mr. WHITEHEAD. Yes. I think that the key point is that the large majority, some 95 percent, of the communications revenue of the Bell System is derived from the standard public telephone service.

The fact that Bell users rate averaging between urban and rural telephone users, perhaps between businesses and residential telephone users, does not mean that this rate averaging if abandoned outside the telephone service will result in any substantial impact on rate averaging within the telephone service.

If you maintain the rate averaging principle within the 95 percent of the Bell System's revenues I think you can see that most of the rate structure would remain intact.

By abandoning rate averaging outside the public telephone service for all these specialized communications services that not everyone wants or needs you can accrue the benefits of competition where it is appropriate; but the revenues from these services are not so great that the abandonment of rate averaging there would cause any noticeable impact on the rate averaging structure within the telephone business.

Mr. HELLERMAN. I guess you would say that the concerns voiced by A.T. & T. and others that competition would result in higher rates to residential users is really a red herring?

Mr. WHITEHEAD. I think it is. It does not follow inexorably that if we allow competition in specialized services, keep the monopoly in

the telephone business, and abandon rate averaging outside the telephone service, that we have to abandon it within the telephone service.

Mr. HELLERMAN. I would like to ask you a couple of questions on Long Lines.

What do you think would happen if Long Lines were placed in a separate corporation not owned by A.T. & T.?

Mr. WHITEHEAD. That requires a rather massive amount of speculation. There is no empirical precedent to guide us.

Mr. HELLERMAN. Right

Mr. WHITEHEAD. I can see some increased administrative problems of coordinating planning, obviously. But on the whole, I think the fact that Long Lines is owned by A.T. & T. is not of significant benefit to anyone. I don't see that separating the ownership of Long Lines would cause any major problems one way or the other, and it could be beneficial.

Mr. HELLERMAN. Do you think that such a change would remove the problems that the specialized common carriers are having in attempting to compete? I guess the Bell Telephone companies would have no reason, then, to give preferential treatment, as it is alleged; and all users would benefit.

Mr. WHITEHEAD. Certainly it would be easier for the regulatory authorities to see what was going on and would, perhaps—at least conceptually—be easier for them to require Long Lines to function on an arm's-length basis with the other Bell companies; although in principle that can be done under the current ownership arrangement.

I think that the question of whether or not that would make competition easier is a very difficult one to answer.

In some ways I think it would. The question of how successful that competition would be, that is to say, how many companies offering how much service would actually be able to compete in a free market, is an unanswerable question. Only some empirical experience will give us the answers to that.

It certainly is discouraging to see Bell, and some of the other telephone companies, resisting even the prospect of acquiring that experience. We really don't know to what extent the problems of competitive long haul communications are due to regulatory hangups and to what extent they are due to legitimate inability to offer the kinds of service customers might want, or to get the cost down lower than what Bell can do.

Mr. HELLERMAN. What ways can you suggest that could be tried to see that the companies that compete with Long Lines are treated on an equal and fair basis with Long Lines?

Mr. WHITEHEAD. I think one way is for the regulatory authorities to detail the arrangements whereby the associated Bell companies deal with Long Lines and with non-Bell companies, and simply insist that the telephone company deal on the same basis with a competitor of Long Lines as it does with Long Lines. After all, the telephone company is a public utility.

It is regulated and it has responsibility for providing service on a nondiscriminatory basis. I cannot quite see the rationale for Long

Lines having the unique role it does. I cannot see the rationale for the telephone companies in the local areas saying that they will do business with Long Lines, but no one else. They, as public utilities, should provide interconnect service on the same basis for everyone.

Mr. HELLERMAN. Thank you, Mr. Whitehead.

I have no further questions.

Senator HART. Mr. Whitehead, you have indicated four principles on which our communications policy would be based.

You indicate, with respect to three of the four, that A.T. & T. disagrees, as do many others, of course.

Is your statement the position of the administration?

Mr. WHITEHEAD. Not as to specifics, Mr. Chairman.

We have not gone through the process of preparing an administration position on this, nor do I think we would be likely to—short of preparing legislation or sending formal comments to the FCC.

But you can be assured that the general thrust of my statement—that is to say that competition is a fundamental principle that should apply in the communications business—does reflect the administration's philosophy.

Senator HART. Was the statement cleared by OMB?

Mr. WHITEHEAD. It was.

Senator HART. That is sort of novel. Usually we are told we cannot get an administration statement because OMB has not cleared.

Now we have one that OMB has cleared, and it isn't the administration's policy.

[Laughter.]

Mr. WHITEHEAD. I won't disqualify it too much, Mr. Chairman. Again, the thrust of it does constitute the administration's position. You may be assured of that.

Senator HART. Well, you caution us on page 10:

It is unbecoming for a company the size and stature of A.T. & T. to use its legal, political, and economic power to seek to extend its monopoly by Government fiat into areas where monopoly is not called for. In my judgment the Government cannot let such an effort go unnoticed or unchecked.

You made some specific suggestions as to what Government should do about it. Do you have, in the light of our exchange, any additional recommendations as to what we should do about it?

Mr. WHITEHEAD. No. I think that as you and Senator Hruska have said, this is an exceedingly complex area. Communications has become very important to our society and to this economy. It behooves us in Government to move with caution, care, and some deliberation.

I think the three approaches that I outlined offer various remedies for improving and enlarging upon the regulatory framework that we have inherited.

Senator HART. One of those recommendations would involve updating, amending the Communications Act. That, of course, is not a subject within the jurisdiction of this committee, but I think the points you have made with respect to the direction that the Communications Act now turns is something that the appropriate committee should give thought to.

Mr. WHITEHEAD. I might elaborate on one thing, Mr. Chairman. My comments about the attempts of Bell as a monopolist to extend its monopoly reflect my fundamental belief in the principle of competition. But I would not want to leave the subcommittee with the impression that I favor competition at all costs. I think there are ways in which we could seek to engender competition that would have some very undesirable effects.

In particular, I am not one of those who believes that the Government should make it unduly easy for competitors to compete with the established telephone companies, and Bell in particular. I think we should make it equitable. We should set the conditions so that they can compete fairly; but we should not make it artificially easy for them and artificially hard for Bell, just because Bell is larger.

I think if we did that we would find ourselves setting up a class of companies that had some kind of artificially protected status; and in a few years we would be faced with a host of problems on how to protect these companies which had enjoyed some economic success due to the artificiality of Government protection.

I would like to leave the committee with the notion that our problem is to find ways for the monopolist and the competitor to compete equitably, rather than with the notion that we should somehow tip the scales in favor of the would-be entrant.

I think the entrants have to come in with their eyes open knowing they face the full risks of the marketplace, knowing that the opportunity to make a lot of money by providing services that the public wants to buy goes hand in hand with the opportunity to go out of business because you go broke.

Senator HART. But your chance of survival is substantially greater, assuming you make a good machine, when the buyer in the marketplace is free to decide to buy that good machine, as distinguished from some Bell machinery.

Mr. WHITEHEAD. That is true. I think there should be the opportunity to offer that better machine, to offer the better service; and the competitor should not have to work against odds that are stacked against him simply because the phone company has a monopoly position.

Senator HART. As you put it, on page 9—

After you bought the service, and you bought the line, you should be able to do with it just about what you are permitted to do when you buy water or electricity.

And also you could add gas to that. If you think somebody else's equipment is better for your purpose, our theory is it is desirable that that option be available.

Now Senator Hruska explained, it may be the decision of the committee to invite you back. Some questions may have developed.

Senator HRUSKA. I have an idea that Mr. Whitehead is a busy man. Otherwise he would have had this statement sooner. We don't want to waste his time too much.

Some of the questions asked here, Mr. Whitehead, separate and apart from your papers, lead me to ask you this question: Have you considered S. 1167 and the mechanisms, powers, and the vast scope of its activities?

Mr. WHITEHEAD. Yes, I have.

As the chairman and I were alluding to, I think we come to quite different conclusions about that. The scope of the new agency that would be established, and the powers that that new agency would have under S. 1167, strike me as quite drastic.

I do not think they are warranted, at least in the communications field. I do not think that our problems with big business in this country are to be solved by setting up more and more layers of big government. As the chairman, himself, has said, when you get big government and big business slamming at each other the customer—the public—tends to get lost in the middle.

I do not think that the provisions of S. 1167 setting up this new agency with extensive powers would be a desirable way of achieving the objective of competition in the communications field.

Senator HRUSKA. There are many people who have studied that who feel that it ventures into an attempt to have a Government prosecuting a law enforcement agency in the field of antitrust and competition, and a court that would sit in judgment on any of the complaints filed—and that would invade the theory of—consisting of business judgments which would be placed into the hands of people who have nothing at hazard.

They risk nothing, and they have no stake in it except to draw their paycheck after devoting a certain number of hours a day, and all the talents they possess, to their job. How much of a factor is this idea that when something new is tried, or some new reorganization of our economic system or industrial system, how much of an incentive is it that those who make those business judgments have something at stake?

Therefore, they are maybe just a little more cautious, and a little more careful not to disrupt something that is working, maybe not particularly well, but working and rendering good service, as opposed to seeking the top of the mountain in idealistic perfection and maybe getting halfway up the mountain and rolling all the way down into the valley again.

Mr. WHITEHEAD. I am a firm believer, Senator, that the best is often the enemy of the good. I furthermore believe that our system of free enterprise relies on the fact that people who make the decisions at the point where it really counts are the people who have something at stake.

On the other hand I think we in Government have to be sure that the conditions of competition and regulation are such that those people in the business world who are making those decisions are subject to the full play of market forces that we accept in this country as being in the public interest.

That is what leads me to make the kind of recommendations and remarks I made today, in an effort to establish a scheme within the communications field such that the market forces can act appropriately so that we can indeed trust the businessman to make decisions in his own self-interest that will ultimately translate into the best interests of the customer.

That is why I find myself in disagreement with the specific measures proposed by S. 1167. While I believe there ought to be competi-

tion I do not think we should set up yet another governmental agency staffed with people who supposedly are acting in the public interest, and who will endeavor to make many of these business decisions for the businessman.

That is perhaps a subtle distinction, but it is an important one. We don't want the Government making business decisions. We want the Government making sure the marketplace works, so when the businessman makes his decision it is working in the overall best interests of the public.

Senator HRUSKA. Much is made out of the concept of competition and how to achieve it and how to make it work for us. There are people who believe that in the petroleum industry we ought to break up the petroleum industry into maybe 10 or 12 different separate entities, and one entity, not interested at all in any of the other entities, would explore for oil, and they would dig a well and hope to get it done.

They would pump it. That is where they would stop. Then the pipeline would take over. The pipeline would be a separate entity. It would start transferring the oil from there to, say, to the refinery.

Then the refiners, separate and apart from all the others, would take over. When the refinery got through with it, there would be a matter of distribution in a separate company, a separate entity. That distribution system would put it in the hands of retailers.

Then the retailers would be separate and apart. They could contract with anyone they wanted.

Do you take it that that type of thing would foster competition and give the kind of results that would be superior to the present system that we have?

That is, in the context of S. 1167, which would give the court the power to say that should be done and will be done, subject only to an appeal to the Supreme Court, which very likely would say, as it does in most sophisticated technical subjects like national labor relations, and so on, "They know more about it than we do. We will leave it up to their decision."

What do you think about the petroleum industry in that light?

Mr. WHITEHEAD. I am certainly not an expert in the petroleum industry, but I can carry those principles over to the communications business.

I would have great reservations about substituting the judgment of an agency like that for the enforcement of our current antitrust laws. The antitrust laws require the Government to go to court if it wants to achieve that kind of restructuring and prove its case.

The burden of proof is on the Government. It has to prove there have been anticompetitive practices and that the public has been a loser under the current scheme. The burden of proof is on the Government.

As I understand the reorganization agency envisioned by S. 1167, the agency would merely have to establish that it thinks a new scheme would be better; and that is too easy a test for the Government to apply. The Government should have to prove its case. I do not think we want to set up Government agencies that simply as-

sert they know better than the private sector what ought to be done, and therefore it ought to be done.

Senator HRUSKA. It costs many millions of dollars to build a refinery these days. Are there apt to be any investors anxious to get in on that sort of business? That is, unless they were assured of a sufficient supply of crude petroleum to keep that refinery busy?

Mr. WHITEHEAD. Certainly there are very real and very legitimate pressures for vertical integration in the petroleum industry and in the communications industry.

On the other hand, I think we all agree that that kind of vertical integration, if carried too far, does carry the potential for abuse.

So we come back to the question: How do we know when it has been carried so far that there is an abuse?

Again I think the answer is for the Government to be required to prove its case, prove the abuse, rather than simply to assert there might be fewer abuses under a different scheme.

Senator HRUSKA. There is another situation that arises, and it arises within the home State of our fine chairman of this subcommittee. That is in the automotive industry.

There are people who say, golly, these automobile companies ought to engage in assembling automobiles and quit right there. When it goes off the assembly line, then a new company will take over. They will deliver the cars to wherever they are supposed to go, distribution centers. Then the distribution center will get them to the retailer. Each of these steps is separate.

The automobile manufacturers should not make the parts, the carburetors, the springs, the shock absorbers, the tires. That ought to be left to each individual industry to supply us and so on.

I suppose there would be a separate corporation to design and develop a blueprint and specifications, and so on.

Are you impressed with that as sort of an arrangement where the judgment of an industrial court will determine where the carburetors shall be made, the electronics of the automobile, and the wheels, and all the parts; are you impressed with that kind of arrangement?

Mr. WHITEHEAD. I am not impressed, Senator.

Senator HART. Do you drive a domestic or foreign car?

Mr. WHITEHEAD. I drive a domestic car.

Senator HRUSKA. That raises another question to which I shall refer in a moment, about the foreign thing, and Mr. Hart knows that. We have gone over this scenario many, many times.

In communications there are those who say—and you suggest it in your statement, the way I heard it—that there should be one company to build the line and quit, and just charge like the railroads charge.

Originally the railroad was supposed to build the rails and everybody was supposed to buy a locomotive, a train, and so on, to use the rails. Then there would be another company that would furnish the telephone. They just hook on to the long-distance wires, the local wires. There would be still another company, if you want nontelephone service, they would go into everybody, but not the one that built the one.

Of course, A. T. & T. would be out of business then except to build the lines and furnish the channels. That is all.

Do you believe that perhaps the system would yield as good results under that kind of arrangement as that which we have now?

Mr. WHITEHEAD. I think it depends on whether you are talking about telephone service or whether you are talking about other kinds of communications.

Senator HRUSKA. Telephone service, too. A. T. & T. would have nothing to do with the telephones. Some other company, divorced from the builders and maintainers of the lines, whether they were microwave stations or wire service, would take charge of the telephone. They would have nothing to do with the telephone. They would simply agree to keep the lines connected and in working order.

Mr. WHITEHEAD. I think what you are suggesting there, as with the kinds of remedies you were talking about for the oil business, or the automobile manufacturing business, is the Government prescribing some kind of a system of cartels in which the Government decides who is going to offer what services. That would be unwise in any business. I think it would be unwise in the communications business.

The problem arises in all three of these industries. I speak most knowledgeably, of course, about communications. When you have both vertical integration and the horizontal integration present in the same industry, you begin to get more and more concentration of power. It begins to be very difficult to see how you can subject those kinds of companies, those that are both horizontally and vertically integrated, to any kind of effective market forces.

What I have tried to suggest in my statement is not that we should set up some artificial boundaries as to what various companies will be allowed and will not be allowed to do in the way of offering service or equipment.

Indeed, that is the kind of cartelization that I said I thought was unwise. The FCC has been driven to it under the old Communications Act. Rather, I think we should try to establish principles whereby the customer will have a choice of suppliers for communications services or equipment other than public telephone service.

If he wishes to buy a physical instrument that he plugs into a telephone line from Bell, then Bell ought to be allowed to sell it to him and he ought to be allowed to buy it. If the customer wants something different, wants something that is somehow specialized in terms of its capability or its appearance or convenience or weight, or what have you, the customer reasonably ought to be allowed to go to another supplier and buy that elsewhere.

I think it is very important that we keep separate the concept that we should limit these various industries as to what they can and cannot do, from the other principle that we ought to allow competition. We ought not to guarantee success; but we ought to create an environment where it is possible. It is in the customer's interest to be able to go to any one of a variety of sources. As I hope I made clear in my statement that it is in the customer's interest to be able to go to Bell to get that telephone just as it is in his interest to go elsewhere and get it.

Senator HRUSKA. If we put into law S. 1167 it means we are assigning the entire duty to the court. Congress will have nothing to say about it unless it wants to run the business of the court. No regulatory commission will have anything to say about it. It will be the commission and the industrial court. They will be the boss. They will be the boss, virtually, and for all realistic purposes non-reviewable.

Mr. WHITEHEAD. That is what worries me about S. 1167. I can foresee a great danger in setting up another regulatory, bureaucratic organization that will parcel out who gets to do what business. I don't think that is in the customer's interest. I don't think that would achieve the kind of real marketplace competition that we ought to have in the communications business outside the basic telephone service.

Senator HRUSKA. A little bit ago there was mentioned the refinery that probably wouldn't be built at all if there was not an assured supply of crude product. The same would be true of pipelines, of course.

What about the builder of these long-distance lines and the microwave stations? Unless they were assured that there would be a concomitant and corresponding increase in the telephones and in the nontelephonic equipment that would use those lines, would they be apt to be built at all? Who could give them that assurance if you were going to break this up into many, many segments?

Mr. WHITEHEAD. I do not think anyone can give the assurance in a free market situation. They have to be willing to run the risks themselves. I think that is a reasonable risk for them to run. I think they ought to have the opportunity to build those lines.

Senator HRUSKA. I agree with you. That is not the way this bill is set up. The bill is set up not on this idea of making both systems work. They are going to make it work their own way.

Mr. WHITEHEAD. Well, I am not here testifying in support of the bill.

Senator HRUSKA. I wonder to another field of monopoly. There is a suggestion, under active consideration now, in the field of news. Some consider newspapers pretty much of a monopoly because of the difficulty of entry; and then comes, in addition to the newspapers, radio stations, television stations, maybe a magazine, and so on. It covers a big spectrum; and the bill we are considering would affect not only communications but also monopolies of that kind. It is in communications; and, of course, broadcasting is not within your official sphere. Nevertheless, it is there. Would you have any thought? That is communications, isn't it?

Mr. WHITEHEAD. Broadcasting is within our sphere. I have not discussed it here because I understood the principle interest of the subcommittee was in the nonbroadcasting side of communications. Certainly, we do have real problems of monopoly, or at least oligopoly, within the broadcasting business, problems similar to those you describe with respect to the newspapers. We have fewer television stations in the country today than we have daily newspapers. You have some of the same kinds of problems in broadcasting; and again,

the same public interest considerations in assuring that there is a maximum amount of competition in the broadcasting business.

Although I did not go into it here, I think there are very real problems with our broadcasting industry today. There is not the kind of competition, diversity and choice in programing material that the American public ought to have. My comments about S. 1167 would apply there with at least equal force as they apply here; namely, that I would be extremely unhappy to see a governmental agency set up with the power to mandate a restructuring of the media side of communications. But that is not to say I don't think they ought to be more competitive than they are.

Mr. HRUSKA. Well, thank you very much. That is all I have right now, Mr. Chairman.

Senator HART. Mr. Whitehead, thank you again.

Mr. Eger, did you have anything to add?

Mr. EGER. No, sir; I did not.

Senator HART. Thank you very much, gentlemen.

Mr. WHITEHEAD. Thank you, Mr. Chairman.

[The following was received for the record. Testimony resumes on p. 3914.]

MATERIAL RELATING TO THE TESTIMONY OF CLAY T. WHITEHEAD

*Exhibit 1.—Paper presented at Telecommunications Policy Research Conference
Re Regulated and Unregulated Telecommunication Services*

BARRIERS TO ENTRY AND BOUNDARIES BETWEEN REGULATED AND UNREGULATED TELECOMMUNICATION SERVICES: THE EQUIPMENT MARKET

(By Richard Gabel)

A PAPER PRESENTED AT TELECOMMUNICATIONS POLICY RESEARCH CONFERENCE—
AIRLIE HOUSE, VIRGINIA, APRIL 17-19, 1974

NOTE.—The views expressed in the present paper are those of the author and are not to be attributed to the Office of Telecommunications, DoC or to the Office of Telecommunications Policy.

INTRODUCTION

Since the latter decades of the 19th century, orthodox economic theory has focused on attempting to demonstrate that a frictionless market mechanism will produce the most efficient allocation of scarce resources among competing ends. This preoccupation has, in turn, dictated a characteristic mode of analysis, in which the economy is divided horizontally into institutions which operate on each side of the market, and so respond in roughly similar ways to market incentives. Within the context of this analytical framework, the Rockefeller and share-croppers are both "households." The AT&T Company and the corner grocer are both "firms." Households demand "final goods" and supply labor and other "factor services" (capital and land). Firms demand labor and other "factor services" and supply "final goods."

This way of subdividing the economy fits neatly into the framework of the concept of "rational choices." Firms supply goods and demand factors in the quantities and proportions that will maximize their profits, given their technical possibilities and opportunities. Households supply factor services and demand goods in the quantities and proportions that will maximize their 'utility', given their initial endowments or assets. The amounts finally chosen, the equilibrium position for the supply and demand of goods and services, will be simultaneously compatible solutions to all these different individual maximizing problems. Orthodox economic theory has many strengths. Market incentives often do direct the economic system in predictable ways. Maximizing is,

under some conditions, an indispensable part of rational behavior, granted the precepts. The analysis is not cluttered with irrelevancies such as market structure, entry conditions, and so on. When all is said, apart from defending the freedoms appropriate to private enterprise from hare-brained schemes of social reform, the theory of optimality of competitive markets has never provided practical substantive insight into the actual working of the marketplace.

Basically, orthodox theory is a theory of markets and market interdependence. It is a theory of general equilibrium-in-exchange extended, almost as an afterthought to cover production and distribution. As a theory, it largely neglects conditions of varying economic power. Households and firms are market agents, never considered as parts of a social structure. Their 'initial endowments', wealth, skills and property are 'givens.' The object of the theory is to demonstrate the tendency towards equilibrium; sectoral conflict is ruled out through the use of selected assumptions.

The Carterfone decision of June 1968 disrupted a formerly stable condition of equilibrium for the telecommunications industry. The "foreign attachment" restrictions of the telephone companies provided an effective barrier to entry in the provision of customer terminal equipment. The FCC decision reducing these constraints was a deliberate attempt to lower these barriers and introduce the market mechanism as a means of achieving the conventional aims of economic theory.

In the short term, some of the objectives of Carterfone have been achieved. Substantial cheapening of product price has occurred in those states where the new interconnect firms have moved aggressively. While the general communications industry publicly prides itself on technical ingenuity, provision of private branch exchange equipment and key systems had remained virtually unchanged since World War II. Interconnection and competition from private suppliers brought significant new features and accelerated new design principles.

In the long term, the consequences of the decision are difficult to predict. For the most part, the monopoly carrier has sought restoration of equilibrium conditions to pre-Carterfone market monopoly conditions.

NEW BARRIERS TO ENTRY

The tools which the monopoly carrier has employed since the Carterfone Decision (1968) in an effort to restore the status quo ante are at least fourfold: (1) the claim of need for protective devices; (2) the use of due process in securing administrative delay; (3) the use of public regulatory process, specifically certain state commissions, to aid in its program, and (4) predatory pricing of its PBX and key system products. Let us examine how each of these strategies operates.

(1) *Prevention of network harm.*—Three months after the Carterfone decision, AT&T filed new interconnection tariffs, removing the former broad prohibition against customer-furnished terminal equipment. The new tariff (effective January 1969) forbade direct metallic connection and required the use of a carrier-supplied interface device before interconnection would be legitimized. The carrier's position was that the interface device is essential to prevent harm to the public message network and to the personnel engaged in maintaining it. There is some validity to this position. There are innumerable accounts of company installers who were (a) unable to locate the appropriate connecting device (of which there are literally dozens), or (b) were unable to complete the installation without assistance from the private supplier. The official carrier explanation is that these difficulties were all indicia of early training and service problems.

In any event, even without the resolution of the matter of technical harms, it should be clear that the level of charge imposed by the carrier for the interface device which the interconnect customer was obliged to lease from it, imposes a significant economic barrier to use of customer furnished terminal equipment. The customer, of course, paid a monthly recurring charge for the connecting device if he furnished his own terminal equipment; if he uses even *identical* common carrier terminal equipment, he pays only the tariff lease rate. The price trade-off here has two facets: the Associated Companies are gradually increasing the level of charges for the interfaces reflect "the increased cost of labor and capital," and concurrently they are reducing their tariff charges for PBX and key systems.

An interesting application of the "network harms" interconnect problem has arisen in the District of Columbia. Since about 1900 the Capital City has owned and maintained a major portion of its own distribution plant as well as its own private branch exchange equipment (purchased from Western Electric). Throughout this century the District plant has functioned with direct metallic connection to the C&P facilities. The local telephone company recently threatened to disconnect its facilities from District government lines unless the appropriate interface devices are secured. This District Highway Department which operates and maintains the plant is in a dilemma. Neither the Highway Department nor C&P have been able to locate *one* previous complaint in over 70 years of operating to demonstrate where metallic connection has involved injury to carrier plant or personnel. On the other hand, the magnitude of the monthly recurring charges for the interface devices for each PBX trunk pair makes continued operation of these facilities uneconomical to the District Government. The C&P Telephone Company has offered to purchase all of the city's PBX equipment at net book cost and lease it back at tariff rates. The city government has been assured that services would be greatly improved.

(2) *Use of due process to delay.*—A second strategy employed in the effort to control the pace of implementation of the customer attachment program is administrative delay. In 1969 the National Academy of Sciences was asked by the FCC to study the appropriateness of the network protection features set forth in AT&T tariffs, and to suggest alternative administrative measures which could accomplish the same objectives of minimizing threatened harms. The NAS suggested that a practicable alternative was for the Commission to develop a set of equipment standards, together with a certification procedure to ensure that independent manufacturers would conform to these standards. Following this recommendation the FCC appointed two advisory committees whose purpose was to develop appropriate equipment standards as well as a certification procedure. The most active of these committees was the PBX Advisory Committee. Its membership included leading technical talent from the independent telephone manufacturing industry with active participation by carrier representatives. After twenty months of careful deliberation, the PBX Advisory Committee released its report and recommendations. In the interim, the FCC had delayed any Rule Making proceedings on the interconnection issue, despite considerable pressure from independent suppliers. The independents alleged that the interface devices were inadequate that they created additional circuit problems (such as mis-shaping dial pulses, preventing through DC testing, etc.) and that they introduced serious economic penalties against private terminal suppliers. The Commission staff took the view that the PBX Committee deliberations would help to the interconnection issue. Since the NAS recommendation in favor of certification was consistent with previous standards recommendations submitted to it by the carrier, and in view of the fact that the carrier itself was authorizing a major portion of the Committee recommendations, it was believed that an acceptable substitute technique was in the making for the connecting arrangement. However, immediately following publication of the PBX Committee Report, the carrier completely reversed its previous position. It now argued that any program of standards and equipment certification was unfeasible and impracticable. As a result of the tangled administrative load caused by this inflexible position, rule making, proceedings scheduled for this spring will not be substantially ahead of the positions of the parties as expressed in 1968.

The competitive jurisdictional authority by state and federal regulatory bodies creates a natural advantage for the communications carrier. When addressing state regulatory commissions, it is not unusual to find counsel for the carrier asserting that federal authority has preempted the field, while at the same time company representatives, addressing the FCC, are invoking exclusive state jurisdictional authority over the same or allied subject matter. Divided authority creates a power vacuum. With both state and federal regulatory authorities hesitating, uncertain or dubious of their own prerogatives, the vacated power is quickly flowing to the aggressive regulatee, ready with decisive recommendations.

Acting boldly in just such a leadership vacuum, early in 1974, the carrier confronted the FCC with the assertion that it was foreclosed from prescribing interconnection standards. In the *Telertent Case*, filed by AT&T in behalf of

all the Bell operating companies, the company claimed that the Petition for a Declaratory Ruling on the preemption of interconnection. . . .

"... is an attempt to have (the FCC) intrude into areas of regulatory jurisdiction specifically reserved to the states by the Communications Act (Section 26 and 221b). This is so clearly so that the question is raised as to the priority of the Commission's action in even entertaining the petition and instituting this proceeding, instead of dismissing the petition forewith"¹.

Almost concurrent with the exchange of legal views which came before the FCC as a result of this challenge to that Commission's jurisdiction over customer station equipment, another hearing was being conducted before the District of Columbia Public Service Commission. A leading issue before the D.C. Commission was the question of its authority to prescribe separations procedures applicable to customer station equipment. The view of the local company, when addressing the D.C. commission, was that FCC possessed preemptive power over the issue of separation of station equipment.

"The FCC's power to preempt separations procedures is contained in Sec. 221c of the Federal Communications Act which expressly confers upon the FCC authority to determine what portion of the communication carrier's property . . . shall be considered as used in interstate or foreign toll service" . . . "Congress intended that any FCC ordered allocation shall be determinative in the prescription of intrastate rates as well as interstate rates"²).

(3) *The use of the regulatory process to delay.*—The monopoly carrier has also used its resources, to secure the support of powerful state regulatory commissions in an effort to reverse or delay the implementation of the Carterfone decision. These efforts have been dispersed generally to all the state commissions, but have been most successful as concentrated on the National Association of Regulatory Commissioners. The NARUC (its better-known acronym) is the trade association representing state commissioners (although federal regulators are included in its roster).

The main thrust of the carrier's representation to the states has been that the Carterfone decision only aids business equipment users, while the real impact of the new competition will fall on the residential classes of telephone ratepayers. In the setting of rates, the carrier argues that its practice has been to establish a higher rate of return on the so-called "vertical services"—telephone extensions, PBX equipment, key systems, etc., as against primary service offerings such as 1-party residential, multiparty residential, etc. This claim is of interest for several reasons. For one thing, it is the first official acknowledgement by the carrier that the company itself *has* been responsible for establishing rate policy in the industry; heretofore, the official company position has always been that the authorized public bodies exercised this responsibility, (i.e., that rates were not the carrier's doing.) Perhaps more significant, however, is the claim that while exercising this "social responsibility," (i.e., keeping the cost of primary service down) the carrier has *consciously* effected cross-subsidization by supplementing revenues from high-cost farmer and residential services with revenues from more lucrative business service classifications. This subsidization procedure may well have been necessary and proper in the pre-Carterfone era when the operating industry was not confronted by competition, and "value-of-service" pricing could be maintained. In the face of this new competition, the carrier now asserts that it can no longer afford to price its services on a value basis, but must price its competitive business offerings on a cost basis. The differential revenues available in the past to subsidize residential household telephone service will not be forthcoming, and therefore the latter services will experience price increases. The state regulators who have characteristically viewed themselves as the front-line defenders of exchange ratepayers, have received this proclamation with expected grimness. This is particularly true of the NARUC activists. Consciously or otherwise, the state commissions (with notable exceptions) have buttressed the position of AT&T with regard to interconnection. The groundwork was thus established for a new pricing policy.

Until recently, carrier arguments concerning past pricing policy, and the extent of deliberate subsidization of residential rates by business rates have

¹ Brief of Bell System Respondents, FCC Docket 19808, pp. 3-4.

² CP Telephone Company Brief, Exceptions pp. 4, 6-7 in D.C. Formal Case No. 595 cited in P.S.C. Order No. 5634, Appendix B, p. 1, April 5, 1974.

remained wholly at the level of unchallenged assertion. The New York Public Service Commission has questioned this conclusion in a recent investigation in which the Commission directed the New York Telephone Company to prepare cost-of-service studies for its primary and vertical service classifications. In 1973, as part of a general statewide rate investigation, the company attempted to comply. The New York Telephone Company cost study showed materially higher earnings on vertical services than on its basic services. The Commission staff promptly challenged the company study. The staff contended that significant portions of basic revenues had been improperly assigned to vertical services, and that new cost allocation methods developed by the company for purposes of the study had assigned significant expenses, attributable to provision of the vertical service classifications, to the basic services instead. In a recalculation of the cost study, the New York Commission staff found that under current rate levels the vertical services (roughly overlapping the new competitive service offerings) were yielding the Company .64% return on net investment, while the basic services showed a return of 5.21%. (Table I). Contrary to company presentations, therefore, the evidence shows that basic service rates had been subsidizing vertical services. Several months later the company responded with rebuttal evidence to the staff review contending that its original conclusions were valid. In a sense, all cost studies are founded on assumptions whose validity must be tied to the objectives of the study. The New York Commission will eventually rule on the reasonableness and propriety of the cost analysis.

TABLE I.—RATES OF RETURN ON BASIC, VERTICAL, AND PRIVATE LINE SERVICES, NEW YORK TELEPHONE CO., YEAR ENDING DEC. 31, 1970

	Basic (percent)	Private line (percent)	Vertical
Median.....	5.21	0.63	0.64
High.....	5.36	1.31	.97
Low.....	5.06	-1.51	.21

Source: Staff exhibit No. 24, N.Y.P.S.C.; case 25290; witness: Y. R. Varma.

PRESSURE TACTICS

When the stakes are high, the carrier may also fairly be described as having used its favorable market position to pressure customers. The discussion of company pricing policy below demonstrates the use of the carrot, but the evidence also indicates that the stick has been employed whenever carrier influence over rate policy and commissioners was desirable.

The federal government is the single largest PBX customer of the Bell System. Perhaps ten percent of the Bell System's private branch exchange revenues are derived from federal government procurement of such facilities. The General Services Administration manages the civil agencies' communications requirements. Accordingly, when GSA, in June 1972 decided to open its Middle River, Maryland PBX services to purchase—lease option to private suppliers, the telephone company went into action.

At a meeting with officials of the C&P Telephone Company of Baltimore, GSA was informed that the telephone company, in the event that GSA proceeded with its plans for private, competitive procurement, was planning new, increased tariffs for out-dialing trunks. The charges would apply to trunk facilities serving customer-furnished PBX's. The telephone company furnishes the trunk facilities interconnecting the customer PBX to the local central office. GSA required in-out dial trunks to complement its PBX purchase order. Increased trunk charges (charges applicable only when the customer furnishes the PBX) would adversely affect the relative economy of GSA's procurement arrangements. However, a far greater impact would fall upon the military agencies located within Maryland which have owned and operated their own private branch equipment since World War II. The GSA calculated that the increase in cost as the result of proposed trunk repricing would exceed \$90,000, a sum far greater than any conceivable saving which might accrue from operation of the Middle River installation. C&P also informed

GSA that in the event the government chose to proceed with its own installation, the telephone company would not share cable sheath with the government. This meant that in the event GSA sought separate B-1 lines or other non-PBX services at the Middle River installation and spare conduit space was not available, such services could not be provided. Following the meeting with the telephone company, GSA quietly withdrew the request for Middle River PBX proposals and accepted service from the telephone company. C&P did not submit its proposed tariff increase for in-out dial trunks after all.

(4) *Pricing policy.*—Undoubtedly the most effective carrier response to terminal equipment competition has been price reductions and tariff amendments. There probably have been more such tariff innovations within the past five years than in any comparable period in corporate history. "Almost any communications manager of a large company can cite examples of requested service arrangements that could not be provided a few years ago, but which suddenly become available."³)

The nature of most of these tariff changes is well known. There has been a movement toward hardware-oriented rather than "package" PBX service. Under package pricing, the customer must select one of several alternative series of PBX offerings. Each such series offering provides groups of service features, not all of which the customer may need. Under hardware pricing, the user selects those features he desires, and is charged only for those selected. Those associated companies which have retained the so-called "package" rates have not been slow to formulate their charges so as to capitalize on their market position. An illustration from Dallas, Texas, brings this point out clearly.

Prior to 1972 Southwestern Bell offered its series 300 PABX at a flat rate of \$604 rental per month. This rate was a typical "package" in that it incorporated the charges for switching, terminal equipment and the required number of central office trunks. A customer who chose to secure its PABX from a competitive supplier was still obligated to pay a recurring charge to the telephone company for trunks and trunk-related services. Table II illustrates this situation for a 30 station/trunk installation.

TABLE II.—Comparison of Southwestern Bell tariff for 300 series PABX with recurring costs to a competitive system, 30 station/10 trunk

Monthly rate—300 series Bell PABX.....	\$604. 50
Competitive system:	
10 trunks at \$27.....	270. 00
Touchtone service.....	35. 00
Interface devices at \$6.50.....	65. 00
Federal excise tax.....	37. 00
Total	407. 00
Difference per month.....	196. 50

It can be seen from Table II that the competitive PABX supplier must figure that his customer will incur charges to Southwestern Bell of \$407, leaving a balance of \$196.50 per month available to cover the amortization of the private supplier's installation cost, maintenance of the equipment, and to permit the interconnect company to earn a profit on its investment. For a time, the interconnect companies managed to do so, eating gradually into SWB's PABX market. That expansion was curtailed abruptly. The tariff device employed by Southwestern Bell to reverse this trend is interesting:

In virtually all the state jurisdictions the carrier has sought rate increases in the past 3 years for its basic services, including increases in trunk rates. At the same time it has sought these substantial increases in basic rates, it has requested either minor increases for its PBX services or, more frequently, sizeable rate reductions. Thus the Dallas City Council was requested to approve increased trunk charges and interface charges, but no change was proposed in basic 300 Series PABX rates. The rate squeeze on the independent supplier can be seen in the new rate comparison shown in Table III.

³ "Interconnection After Five Years" prepared by Business Communication Review staff, Jan.-Feb. 1974 issue of BCR, p. 5.

TABLE III.—*Comparison of Southwestern Bell 300 series PABX rates with charges to customers with own PABX equipment, various trunk sizes*

1. Standard Southwestern Bell series 300 PABX monthly rate-----	\$604.50
2. Charges to interconnect customer: ¹	
30 phones, 8 trunks-----	382.71
Difference -----	-221.79
3. 30 phones, 10 trunks-----	478.39
Difference -----	-126.11
4. 30 phones, 12 trunks-----	574.07
Difference -----	-30.43
5. 30 phones, 14 trunks-----	669.75
Difference -----	+65.25

¹ Costs shown exclude interface charges at \$7.15 per trunk, but include excise tax.

The first example in Table III illustrates the carrier charges where the PABX installation requires 8 trunks. Note that the interconnect supplier, after payment of carrier rates, would only have \$222 left to amortize his equipment investment, provide maintenance, and earn a profit. For the ten trunk installation, there would be \$126 to meet these costs and still remain competitive with 300 PBX charges. With 12 trunks, the independent supplier is left with only \$30. The ultimate in this competitive pricing practice is reached when the customer has 14 trunks. We must assume that the cost to the carrier of providing the trunks for its 300 PABX series is the same as the cost of providing trunks to the interconnect customer. For the private supplier to compete with carrier rates, he must compensate the customer some \$65 a month just to meet the trunk charges.

The last example in Table III should make it clear that the \$604 per month "package" rate could not cover even the trunk charges included in the price, much less provide any money for the equipment, its installation, maintenance or for a return. It is difficult to avoid the conclusion that Southwestern Bell's PBX tariffs are subsidized by other classes of ratepayers. Shortly after the Dallas City Council adopted the new PBX tariffs, Litton BTS the largest of the local interconnect sales organizations, closed its local office.⁴

In addition to the "rate squeeze" treatment illustrated above for Dallas, Texas, the Associated Companies have incorporated other innovative tariff arrangements to meet the competitive interconnect markets. In a number of jurisdictions the companies have introduced a "Contract Allowance Plan." Typical terms of the (CAP) plan are offered in the Washington-Oregon areas of the Pacific Northwest Bell Telephone Company. The CAP contract plan grants to PBX customers rate discounts which are below established tariff rates, dependent on the customer accepting an agreed service period. Thus, if the customer signs a term contract agreeing to retain the Pacific Company's service for an eight-year period, he earns a 5% discount; a 9% discount is granted for a ten-year service period, and up to a 21% rate discount if the customer will promise to retain service for a twenty-year period. The Contract Allowance Plan is a pricing strategy to insulate such customers from political interconnect supplier competition. In a period when equipment, labor, and operating costs of the telephone company are rising very rapidly, 21% rate discounts are difficult to explain in context of "cost pricing."

Other variants of the Contract Pricing Plan have been offered in other jurisdictions. The most widespread new tariff treatment is the optional payment plan. These plans are modeled after arrangements introduced by the independent suppliers, but vastly exceed anything offered by the latter in the generosity of terms. Under the optional payment plans, the PBX customer of the telephone company prepays various amounts to reduce his monthly service charge. There are step-down payment plans whereby a user can pay higher amounts during the first few years he rents a system, and lower amounts later on. Both these types of plans are frequently accompanied by contractual guarantees from the telephone company that user charges will

⁴ Ibid., p. 7.

not be disturbed by any future rate increase. The telephone company is not insulated from the effects of inflation any more than any other industry. The guaranteed rate provision undoubtedly protects that customer market for the company, but implies that other classes of customers will bear such cost increases.

COST STUDIES

Beginning in 1971 and continuing through the present, all the Associated Companies have applied for rate increases before their respective State Regulatory Commissions. The justification for the increases was based on higher costs of wages, materials and capital. Whatever increases in revenues were found necessary by the Commissions, considering the general nature of their cause, it would be reasonable to assume such increases would be apportioned among all the services offered so that no one service would be disproportionately burdened. Instead, however, concurrent with general rate increases affecting company basic services, the telephone company proposed no rate changes or significant rate reductions for certain PABX and key systems, those which had been encountering market competition. Most of these proposed rate reductions occurred concurrent with general state-wide rate increases and were not challenged by the State Commissions. This deserves some discussion.

With isolated exceptions, telephone rate making has been the province of the communications utility. Rate cases, both at the Federal and State level, have been primarily concerned with the company's jurisdictional revenue requirements for the total service classifications offered by the carrier. In most State Regulatory proceedings, and prior to 1962 in interstate rate cases before the FCC, regulators felt that discretion as to how to distribute these revenue requirements among the different service classifications was best left to the utility as a matter of managerial prerogative. Few Commissions had the staff support to undertake the review of rate structure. Accordingly, when the Associated Companies chose to reduce or maintain rates for its competitive services, while uniformly increasing rates for all its monopoly services, the commissions were merely following historical practice in not challenging the differential treatment. Under these circumstances, the potential for cross-subsidization of services is not an addressable issue.

The financial impact of the selective pricing proposal adopted by the Associated Companies should not be overlooked. Each of the state rate proceedings involved proposals for overall increases in revenue requirements. Such increase was predicated on earning a return on the company's total plant investment and recovery of total expense and taxes. The reductions or differences in rate levels as related to the competitive services did not need to be supported individually. The opportunity to avoid having to give sufficient proof of the relationship between individual service cost and individual rate proposals is afforded by the nature of the rate of return proceeding. The administrative mechanism makes it possible to obscure not only the competitive impact, but also the inconsistencies imbedded in the reduction of rates for certain equipment items, and the overall increase in rates applied to all other categories of service. When the state regulatory body adopts the company-recommended overall rate structure, the Associated Company need not support its rate restructuring. The possibility exists, then, that cost burdens may be passed over from the class of customers furnished the competitive services, to be borne by the customers who are being provided the monopoly service classifications. The interconnect suppliers are in a less favored position. Their sole means of cost recovery are the charges for the specific equipment (PBX's, key systems, etc.) marketed to their customers.

The pricing strategy of the Companies did not go unchallenged. The interconnect supplies intervened before several State Commissions at the time the carrier was seeking rate restructuring proposals. However, in a few jurisdictions the Commissions did request cost studies of the carrier in justification of the proposed rate reductions. The record made in several of these proceedings is instructive in demonstrating how cost data might be selectively organized to justify price. For purpose of illustration, material has been drawn from two proceedings, one in Oregon, another in Michigan.

The Oregon Public Utility Commission took cost testimony in the spring, 1973. The Pacific Northwest Bell Telephone Company (PNB) filed for approval of an increase in its allowed rate of return from 8.6% to a requested level of 9.5%, asking for general upward adjustment of virtually all basic service classifications, but a downward revision of certain (competitive) PBX rates.⁵ Mr. L. Pinnt, General Studies Manager for PNB furnished a special study justifying the recommended rate reductions for PBX service. It was termed "full additional cost identified on a going basis."⁶

The special study excluded the company's actual plant investment in PBX facilities. Instead, a hypothetical, constructed investment base was calculated "as if all PBX customers would be served by 756 and 770 PBX equipment." This "current" cost investment "relates to equipment that could be, but isn't used."⁷ Mr. Pinnt explained the need for the new cost approach: "In a competitive environment you can't look back . . . to make a decision for the future . . . if we are going to compete we have got to base these (PBX) prices on the future, going forward."⁸

The investment per PBX line of installed capacity for Mr. Pinnt's hypothetical system amounted to \$131.74.⁹ Mr. Kamps, another PNB witness, testified to the comparability of Western Electric prices to those of general trade suppliers. He testified that "the prices of Western dial PBX equipment run very close to 100% of the prices of independent manufacturers."¹⁰ Wage rates for installation crews are comparable for Bell and independent suppliers. Although PNB failed to disclose its actual investment in PBX equipment, an intervenor, R. Stevens for Selectron, Inc., did insert his cost experience into the record. The competitive cost of PBX switchgear was shown as \$271.99 per line.¹¹ From the evidence in the record, it would appear, therefore, that PNB's investment cost for rate-making purposes was 51.6% less than its competitors, even though actual costs are about the same as the costs to the independent suppliers. One should not lose sight of the fact that at the same time these constructed cost figures were employed in justification of the proposed PBX tariff, the company's *actual* investment in the equipment was submerged in the company's overall rate base submission for determining aggregate revenue requirements.

PNB treatment of its depreciation reserve also merits notice. Rate of return regulation applies an earnings rate to net plant; that is, gross investment less the accumulated depreciation reserve. The hypothetical investment in PBX equipment was expressed in terms of future vintage facilities, presumably net of any accumulated depreciation reserve. Actually, the company applied a depreciation reserve adjustment of 22.6% to its 770 series PBX equipment and 36.3% depreciation reserves for its 756 PBX equipment.¹² It should be clear that application of these depreciation reserve ratios to new, undepreciated plant makes it impossible for the full additional costs to sum to PNB's revenue requirement. A PNB customer using a 770 PBX is paying no return (through rates) on 22.6% of the plant in service. The practice certainly contributes to an associated company's ability to "meet competition."

To develop annual revenue requirements applicable to specific equipment items, the carrier applies annual charge factors to gross investment of that equipment class. The annual charge factors are developed on a gross, overall basis by relating past years' expense to the corresponding plant item. In its PBX cost study, PNB estimated PBX maintenance expense by applying its maintenance annual charge factor to its hypothetical plant investment. This produced the sum of \$453,200 as its "full additional cost of PBX main-

⁵ Re Application of Pacific Northwest Bell Tel. Co. for Authority to Increase and Adjust Its Rates and Charges, Oregon Docket No. UF-2955.

⁶ Transcript of Record, Oregon Docket U-2995, p. 452.

⁷ *Ibid.*, pp. 4530-31.

⁸ Tr. Oregon Docket No. U-2955, p. 5222.

⁹ Tr. 4576.

¹⁰ PNB Ex. 23 and Tr. 1236.

¹¹ Exhibit 106, pp. 1-7.

¹² Tr. 5215, 5205. These ratios represented the Company's estimate of the theoretical reserve ratio.

tenance.”¹³ The company's actual maintenance expense for large PBX equipment was elsewhere reported as \$1,009,869.¹⁴ The difference in results is inherent in the “additional costs” methodology. The annual charge factors are derived on the basis of expenses incurred in a recent past period to gross historical investment for the same time period. When the ratios are applied to a current, hypothetical investment representing half the actual plant costs, the estimated expense *must* be correspondingly understated. Without belabouring this point, it should be clear that application of the remaining annual charge factors—administration, taxes, return—must therefore result in corresponding understatements of these expenses.

The result of all PNB's cost development was to be the basis for its proposed rates. While the independent suppliers had competed measurably well before the PNB restructuring of rates, the new common carrier rates are consistently below those of the competition, as Table IV will show.

TABLE IV—COMPARISON OF INTERCONNECT SUPPLIER PBX RATES WITH PACIFIC NORTHWEST BELL EXISTING AND PROPOSED PBX RATES

Line trunk configuration	Interconnect supplier rates	PNB rates		
		Existing	Proposed	
		300 series	300 series	100B
40/10.....	\$438	\$450	\$400	\$405
60/10.....	528	570	505	515
80/12.....	629	685	623	563
100/15.....	1,039	800	748	693
120/19.....	1,456	915	829	354
160/24.....	1,558	1,145	1,121	931
200/29.....	1,659	1,375	1,364	1,109

NOTE.—The 300 series PBX tariff provides a variety of service features and utilizes step-by-step switching equipment. The 100B PBX service is a new offering, provides the same features as the 300 series but uses the 770 PBX equipment. The 770 is a crossbar unit modeled after the Japanese NA409. The significant difference is in the unit rate.

SOURCE.—Oregon docket UF-2955, exhibits 104 and 51A.

In August 1973 Commissioner R.W. Sabin issued his final order in this rate proceeding. In authorizing adoption of PNB's new PBX rates, the Commissioner said: “. . . it is not the Commission's place to determine whether PNB's pricing policy results in lower rates than its unregulated competitors.”¹⁵)

Following introduction of the carrier's new PBX tariffs, the interconnect market in Oregon came to a complete standstill. No private branch equipment has been sold or leased by private suppliers.¹⁶)

Another current state regulatory proceeding wherein such new cost analysis methods were employed is the application on February 13, 1973 with the Michigan P.S.C. for a \$29,700,000 rate increase. Here the company is contending that increases in cost of labor, materials and capital justified higher rates.¹⁷) MBT proposed increases in all basic classes of exchange and state toll service, along with a restructuring of rates for key telephone systems and PBX services. The rate proposal called for both increases and decreases in its “vertical” services. However, all the increases in vertical services were in the non-competitive area. All the decreases were in the competitive area.¹⁸)

¹³ PNB-PBX Cost Study, Attachment II, line 5.

¹⁴ Annual Report Form M-PNB-Oregon Schedule B-5 and Exhibit 52.

¹⁵ Final Order 73-447, Oregon Public Utility Commission, Docket No. U-2955.

¹⁶ Information furnished by Ray Stevens, President and E. Splevack, Attorney, Selectron, Inc., interconnect intervenor in Oregon Case No. UF-2955.

¹⁷ Application of Michigan Bell Tel. Co. to Revise Rates and Charges, Mich. P.S.C. Docket U-4293.

¹⁸ The total increases are accounted for by (1) a separate charge for keyless instruments previously included in basic equipment rates (Guillm direct, p. 15); (2) increased charges for 2-line key systems (Hamming Direct, p. 15); and (3) increased non-recurring charges (Hamming, Exh. A-16, p. 46).

The MBT testimony demonstrating the inflationary impact on all its costs was convincing; the evidence that costs for its competitive services had been insulated from such general cost trend was not as convincing.

In examining MBT's cost allocation methods, it is appropriate to briefly review the source of its primary equipment costs. Western Electric, as the manufacturing arm of the Bell System, furnishes about 90 percent of the equipment procured by the Associated Companies. Under Western costing methods, all its overhead costs as well as certain direct costs are allocated on a broad basis to equipment categories (viz., cable, apparatus, etc.) and not to specific equipment items. Similarly, although Bell Telephone Laboratories research in the terminal equipment area is directed almost completely to business telephone equipment, its costs are spread unspecifically across all products. The net effect of these costing procedures is that residential telephone equipment bears charges whose incidence benefits only business equipment. The California Commission has concluded: "Western Electric unit prices are not based on actual manufacturing costs."¹⁹) Western's cost allocation methods are a long-standing historical practice. However, with the given market structure, the presence of viable competition in some operating segments and a monopoly situation the temptation for the manufacturer-supplier to downplay those individual costs of equipment which enter into the competitive area must be severe. For the study at hand, the prices for PBX and key equipment billed by Western to Michigan Bell are important insofar as they are entered as the material base for its cost-of-service studies.

Cost analysis techniques employed by MBT were not too different from those encountered in Oregon. The Michigan Company employs three types of PBX switching equipment in furnishing a tariff service known as PBX III service.²⁰ Until 1973 MBT employed the 757 and 800A PBX for the service; beginning in 1973 it began the purchase of the newer 770A unit from Western Electric.²¹) Each of these serving vehicles has similar service characteristics and thus could be used interchangeably. MBT intends to continue to use its stock of existing 757 and 800A switches, but not to add further units. Future purchases are planned to consist of the 770A unit.²²) The relative investment costs of the 757 in the 80-line unit are approximately \$28,000; for the 800A-\$18,000; and for the 770A-\$13,839. In calculating revenue requirements for the 80-line PBX III service, MBT assumed a mix of 90% 770A equipment and 10% 800A PBX. The Company witness observed that "the proposed mix will be realized over the next three or four years."²³) Since the 770A is considerably less costly than either the 757 or 800A units, the costs for PBX III services (the most highly competitive area) are at present significantly understated. The effect of this averaging method is to shift the cost of the older equipment to other classes of ratepayers.

Depreciation expense is calculated as the sum of two parts. The cost of reusable plant is amortized over the service life of the equipment; non-recoverable costs, ie., installation labor, engineering and minor materials are amortized over the location life, the average length of time the equipment is retained on a customer's premises. In a 1970 rate proceeding MBT estimated located and service lives of this class of PBX equipment at 5 years and 14 years respectively. For purposes of its special study, however, the company used a location life of 8 years and a service life of 17 years.²⁴) Between 1970

¹⁹ California P.U.C. Decision 74618, Cases No. 8662-3, p. 664, Aug. 27, 1968.

²⁰ PBX I, II and III all provide certain standard operating features, PBX III offers certain additional features such as attendant camp-on, call-hold, etc. These are furnished at additional charge.

²¹ The 757 is a crossbar switch introduced in 1962; it is limited to 200 line capacity. The 800A was the first electronic PBX offered by Western (1966). The 770A is a cheaper version of the Japanese NA409 switch imported by the interconnect company and whose copy is supposed to supplant both the 757 and 800A units.

²² Transcript of Testimony, MBT Case No. U-4293, tr. 5634, 5689.

²³ Leese cross-examination, Tr. 5366.

²⁴ Tr. 5394, 6239.

and 1973 MBT experienced serious competition from the interconnect suppliers with accelerated changeouts of equipment due to obsolescence and marked competition.²⁵) The 757 has been in use since 1961-2 and has become obsolete only after eleven years of use, notwithstanding the estimated 17 year service life.²⁶) Under an attractive pricing plan offered by MBT, customers can change from one type of PBX to a more advanced model without incurring any termination liability. The effect of this opportunity as regards depreciation suggests a *shortening* of location life, not an extension. It was noted that in calculating average PBX investment, MBT assumed 90% would be the latest variety, the 770A unit. The high proportion of newer equipment must effect the retirement of the older equipment. Prematurely obsolete PBX equipment means the failure to recover, through rates paid by PBX customers, plant costs which must then be borne by other classes of ratepayers.

SELECTIVE, RATHER THAN CONSISTENT COST DATA

Maintenance expense is a significant portion of the total costs of furnishing PBX and key services. Test-period operating results submitted by MBT for determining overall revenue requirements were based on basic data for the calendar 1972. In addition, the company made a persuasive case for updating the 1972 results to reflect wage and salary increases that had been negotiated for the year 1973. However, in preparing its special cost study for PBX equipment, MBT based its maintenance expense on 1970 costs.²⁷)

An Administration expense factor is employed by MBT in estimating certain costs as a function of plant investment. Among other expenses, "Administration" includes the Marketing Department, training, customer instruction, and so forth. The factor is derived by relating the historical expenses to gross plant for a common time period. An accepted principle of cost allocation is that where specific costs can be identified and assigned to a service, that service is removed from the broad allocation treatment.

For example, MBT expends at least 95% of its Marketing Department effort in behalf of its business customers.²⁸) The MBT allocation method distributes these expenses pro-rata to investment across all classes of service. The cost of training installers is included in the Administration factor and applied uniformly to all classes of service. PBX and key system installers receive training which is applicable only to business customers.²⁹)

The cost of customer instruction is recovered from general revenues even though this instruction is devoted almost exclusively to business customers.³⁰) Similarly, the MBT Traffic Department expenses are recovered out of overall operations. PBX operator training performed by Traffic Department employees is done solely for business users of PBX equipment.

The next effect of these cost procedures is to charge many Michigan Bell customers—typically residential customers—for expenses which do not relate to their service.

The PBX cost studies were the rationale for MBT's rate proposals. The area for most active and direct competition between MBT and the interconnect companies has been in the small PBX area, 100 lines and fewer. This was the area where company rate proposals showed the greatest reductions. Although MBT sought an overall increase of about 20% in aggregate revenues, reductions in the competitive PBX area range between 17% and 34%. Table V summarizes past and proposed rates for PBX services in the most highly competitive area.

²⁵ The 757 PBX has been rated A and M (additional and maintenance) which indicates it is being manufactured only to maintain existing installations.

²⁶ Tr. 5365-66.

²⁷ Tr. 5234, 6214-6226.

²⁸ Tr. 5264, 6216.

²⁹ Tr. 5183.

³⁰ Ibid.

TABLE V.—MICHIGAN BELL EXISTING AND PROPOSED PBX RATES FOR SYSTEMS UNDER 100 STATIONS, VARIOUS LINE/TRUNK GROUPS

Line/trunk configurations	Existing series 300	Proposed PBX II	Percent reductions
7 Trunks, 25 stations, 8 extensions:			
Flat rate.....	\$486	\$323	34
Message rate.....	486	323	34
8 Trunks, 35 stations, 12 extensions:			
Flat rate.....	488	365	25
Message rate.....	488	365	25
9 Trunks, 45 stations, 18 extensions;			
Flat rate.....	489	408	17
Message rate.....	489	408	17
10 Trunks, 55 stations, 20 extensions:			
Flat rate.....	571	448	22
Message rate.....	522	448	14

Source: Brief, Litton Systems, Business Telephone Systems, Chart I, p. 94, Michigan P.S.C. Case No. U-4293.

On December 21, 1973, the Michigan P.S.C. issued its Opinion and Order in Case No. U-4293. The Commission adopted the PBX rate proposals submitted by the telephone company with minor modifications submitted by its staff. With respect to "rate restructuring" of PBX and key systems the Commission noted: "The intervenors . . . did demonstrate that the complicated and extensive cost studies are not entirely free from flaws and that reasonable arguments can be made that alternative judgements might be culled from the data used."³¹ However, no attempt was made to reconcile the adopted rate increases for basic services and the concurrent reductions in rates for competitive services.

Three months after the Michigan P.S.C. Commission decision the interconnect supply market for key systems evaporated, according to the local trade association representative.³² Independent suppliers are still installing small PBX units which had been contracted for prior to the Michigan Bell rate reduction, but there is no longer evidence of additional business.

INTERCONNECTION IMPACT ON THE CARRIER

The 1973 Annual Report of AT&T to its shareholders reserved its initial section for a special message of the Company Board Chairman, Mr. deButts. Mr. deButts devoted virtually all of his message to expressing concern over the intrusion of market competition into the telecommunications industry. He reassured company stockholders that ". . . wherever competition might be mandated in the telecommunications industry, the Bell System will be a good competitor."³³

The Bell System is the single largest industrial corporation in the world. Few would question the availability of corporate resources to take on all comers. The previous discussion should have demonstrated the resolve and stated intent of the company to do precisely this. This June is the sixth anniversary of the FCC's Carterfone decision. How serious has been the impact of private supplier competition in the terminal equipment areas on carrier operations? We have evidence from two sources: a recent study undertaken by the Stanford Research Institute, (SRI), and data published by the Bell System.

The SRI study results show that after six years of active inroads into telephone company markets,

³¹ In the matter of the Application of Michigan Bell Tel. Co. for Authority to Revise its Schedule of Rates and Charges. Mich. P.S.C. Case No. -42933, p. 38, 12/21/73.

³² J. S. Cosgrove, Michigan Independent Communication Association.

³³ 1973 Annual Report, AT&T Co., p. 9, Feb. 12, 1974.

"... (the telephone companies' revenues were about \$28 billion in 1973—or 150 times the sales figures for interconnect suppliers. Telephone companies equivalent sales for new and replacement PBX and key system installations were 77 times greater, or \$1.4 billion. The 1973 revenue loss for the telephone companies as a result of interconnect suppliers' installed base of 696,000 PBX and key phones was about \$70 million, or 0.25% of the \$28 billion total revenues."³⁴

Although the NARUC is not a regulatory body, but a trade association representing state regulators, the group formalized its concern over the threat of competition to carrier revenues by holding hearings this February on the issue of economic impact on competition. The telephone company furnished most of the testimony. Among the data provided by Company witnesses was a tabulation of company revenues derived from its principal "vertical" services. Table VI below was derived from this information and shows annual company revenues for 1963–73 earned from PBX's, key systems, data modems, dialers, answering sets and extension telephones. In order to put the data in some historical perspective, it has been organized to compare growth rates for the 5-year period prior to Carterfone (1963–67), with the 5-year period subsequent to Carterfone. It is significant to note that, system-wide, the carrier's compound rate of revenue growth for its vertical services was 10.1%, both before and after Carterfone. The most active area of interconnect competition has been the marketing of private branch exchange equipment. Note that carrier revenues from PBX's have not only increased in absolute terms since Carterfone, but the rate of growth has accelerated in contrast to pre-Carterfone years.

TABLE VI.—HISTORICAL DATA REGARDING BELL SYSTEM PROVIDED TERMINAL EQUIPMENT, 1963–73

	PBX's	Data modems	Dialers	Answering sets	Key systems	Extension telephones	Total
Annual revenues (millions):							
1963.....	\$410	\$4	\$2	\$4	\$416	\$227	\$1,063
1964.....	430	7	3	5	461	245	1,151
1965.....	462	10	4	6	516	265	1,263
1966.....	513	15	5	6	572	285	1,396
1967.....	575	23	6	7	641	310	1,652
Average rate of growth (percent) 1963–67..	8.8	54.8	31.6	14.9	11.4	8.1	10.1
Carterfone (millions):							
1968.....	\$631	\$34	\$7	\$9	\$705	\$330	\$1,716
1969.....	669	54	9	10	787	352	1,911
1970.....	768	70	11	12	876	372	2,109
1971.....	837	84	11	15	938	393	2,278
1972.....	946	95	11	16	1,069	434	2,571
1973.....	1,065	108	11	20	1,136	466	2,806
Average rate of growth (percent) 1969–73..	11.1	18.9	5.2	18.9	9.6	7.3	10.1

Source: Derived from Bell System Exhibit 3, Attachment A, NARUC Investigation, Feb. 8, 1974.

We have previously observed that orthodox economics holds that markets allocate scarce resources according to relative supplier efficiency. An examination of the actual operation of the interconnect market reveals that in the real world the market mechanism is actually subordinate to power, and to the pre-existing distribution of resources. The theory would say that the regulatory process exercises constraints and inhibitions on the regulated utilities. Practice shows the reverse. The institutions of public regulation seem to impose their constraints on the usurper and new entrant; the monopoly utility is able to manipulate public policy to protect its own market position.

If interconnect competition has been so minimal in its effect on the Bell System as Table VI would indicate, why has the corporate giant reacted so vigorously?

³⁴ "Telephone Interconnect Industry," Stanford Research Institute, Report No. 510, p. 8, January 1974.

Telecommunications

Interconnection:

Wherefrom and Whitherto?*

RICHARD GABEL

Contemporary textbooks on public utility regulation explain the development of communication regulation as stimulated by public need to obtain the economies obtained from an industry of large increasing returns to scale. Of course, the development of regulation of communications did not occur in this fashion. Most current arguments for monopoly organization of communication services are post hoc rationalization instead of valid historic descriptors. The establishment of communications as a public utility with monopoly status was encouraged by energetic and farsighted businessmen who preferred the incursion of state regulation to the risks and instability of competition. Among the most powerful tools that were developed to insure the primacy of monopoly organization was the prohibition against "foreign attachments," the refusal to interconnect the public message network with customer-owned terminal devices.

Since its inception, the Bell system has refused to connect its local lines with customer-furnished equipment. This prohibition has been enforced by state regulatory commissions. The Carterfone decision represents the end of an era and the demise of public acceptance of the classical arguments against "foreign attachments."

By the Carterfone decision of June 27, 1968, the Federal Communications Commission opened the way for private, noncarrier suppliers of terminal devices to interconnect with the Bell system, consistent with the

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integrity of that system. If the decision is implemented in the spirit in which it was intended, it promises sharp acceleration in the pace of technical and service innovation in the telecommunications industry and serious inroads in the prevailing monopoly domination of that industry. But there are strong indications that the FCC and Bell are dragging their feet in terms of implementation, and that full implementation will require several years of negotiation and procedural development.

The Carterfone decision did not spring full blown like Athena from the head of Zeus. Interconnection restrictions and prohibitions date to the earliest days of telephony. In the early years extensive interconnection restrictions were used to prevent competitive inroads by independent telephone companies. The development of the Kingsbury Commitment (AT&T, 1913, pp. 24–26) and enactment of the Willis-Graham Act in 1921 ended Bell refusal to interconnect with nonduplicative independent telephone companies. The removal of this prohibition coincided with the intensified enforcement of the “foreign attachment” provision in Bell system tariffs forbidding the use by a customer of any device or appurtenance as attachment to the message network, on pain of removal of service.

Bell’s partial motivation in opposing interconnection with independent telephone companies in the pre-Kingsbury period and reinforcing the “foreign attachment” rule throughout its history has been to impose obstacles to the growth of competing suppliers and to establish its own domination of the field. Originally, this motivation was candid and open, but more recently, and particularly throughout the Carterfone controversy, the Bell system has recognized that public relations need a more subtle and sophisticated approach. Private profit motives have been submerged and interconnection opposed on “technical” grounds. A major part of this chapter reviews the issues that surrounded the interconnection controversy throughout its history. Perhaps if we know where we came from, we will be able to better predict where we can go.

INTERCONNECTION RESTRICTIONS AFFECTING INDEPENDENT TELEPHONE COMPANIES, 1893 to 1920

The expiration of the basic Bell patents in 1893 marked the end of its monopoly over the telephone field and the beginning of the independent telephone industry.

From that time until about 1913, there was limited interconnection between Bell and independent exchanges (FCC [b], pp. 134–66) since ability to interconnect would have strengthened the position of the independent companies, and Bell was not interested at that time in helping the independent companies grow.

Inability of the independent exchanges to connect with Bell for long-distance service meant that they could provide service only within the geographic limits of the particular territories they served. The independent companies early recognized this obstacle to their growth and in 1899 attempted to form an independent long-distance network. Construction of the network required substantial outside financing, and the independents tried to arrange the necessary financing through a private financial consortium. It collapsed, however, with the withdrawal of its principal member at the request of J. P. Morgan of the banking firm (Commercial & Financial Chronicle, 1899).

Bell's President Theodore Vail clearly set out the company objections to interconnection in 1909 before the N.Y. State Joint Legislative Committee on Telephone and Telegraph Companies.

VICE-CHAIRMAN MERRITT. You have said that inter-communicating is possible. What do you say as whether it is feasible?

MR. VAIL. Well, it is not feasible.

VICE-CHAIRMAN MERRITT. Yes, what are those objections, and what are the business objections, if any?

MR. VAIL. Well, our principal objection, of course, is that it would give a competing exchange advantage of our big system, without any corresponding advantage to us, that we built up and maintained—often times at a loss to ourselves. We have a large system extending all over the United States and perfectly connected, and if a competing exchange in the town should have all the advantages we have, there would be no corresponding advantage to us. [N.Y.S. Joint Committee, 1909, p. 458]

While there were also objections to interconnection on technical grounds, they were clearly subordinated to economic considerations, as is apparent from the following dialogue between Mr. Vail and Committee Counsel.

Q. What do you say as to the possibility or practicability of one telephone company giving interconnection with the subscribers of another telephone company when they are equipped with different styles of apparatus?

A. Why, it would be unsatisfactory—there is no question about that at all.

Q. Would it be possible to communicate?

A. Most anything is possible when people undertake to do it.

Q. Has it ever been done?

A. Yes. It is being done every day. [N.Y.S. Joint Committee, 1909, p. 459]

Nor was Bell alone in opposing interconnection. The independent telephone companies also opposed interconnection and took active measures to block state legislation that would compel physical ties between competing telephone companies. Burt Hubbell, President of the Federal Telephone

Company (serving Buffalo, N.Y.) and a leader in independent telephony in New York state stated his reasons against interconnection before the N.Y. State Joint Legislature Committee (1909, p. 457):

... A business man using a complete telephone service must have our service. . . . If the Bell Company had access to our exclusive list, it would be a very easy matter for it, with its large income in New York City, to divert its unusual profits to Buffalo to care for the extreme loads that it would afford to take, and underbid for telephone service. There would not be any incentive to take the service of the independent company . . . it would ultimately create a monopoly.

Had state policy makers pressed the issue of interconnection between Bell and the independents at that time, a markedly different industrial structure would probably have evolved. However, since both Bell and the independents opposed interconnection at the time, the state legislators did not do so.

The issue was ultimately joined at the federal level. Bell's rapid acquisition of independent properties led the independents in 1913 to file an antitrust complaint with Attorney General Wickersham. The Kingsbury Commitment resulted from the intervention of the U.S. Justice Department. Under this agreement, the Bell system agreed not to acquire control over any competing company, and to connect its system with those owned by independents if the latter met the Bell system equipment standards.

This commitment to interconnect with independent telephone companies was actually the culmination of a series of steps leading in the same direction. In the first place, the bitter price and service rivalry with the independents had resulted in an overextension of financial resources by Bell. Between 1895 and 1905, the Bell system assets nearly quadrupled, increasing from \$120 million to \$453 million (FCC [b], p. 52). Competition, however, had caused Bell's revenues to be decreased from \$88/station in 1895, the first year of competition, to \$43 in 1907 (FCC, 1958, pp. 243-250). The sharp reduction in Bell's earnings was the source of repeated lament to stockholders (AT&T, 1904, p. 10 and AT&T, 1906, p. 12). When financial stability is at stake, the financiers intervene to obtain stability.

In January 1911 . . . an effort was made to effect a working agreement between J. P. Morgan, the independents and Bell. . . . Bell proposed that both sides seek to furnish an efficient service to the public and suggested that in cities where both operated, the stronger exchanges absorb the other on an equitable basis. . . . Bell was finding difficulty in obtaining sufficient capital for development. Morgan, it was rumored, having told the Bell officials that the telephone business was so great that the financial interests could not furnish capital for continued warfare. [MacNeal, 1934, p. 184]

As noted here, the independents had also been intransigent over the subject of interconnection, but they, too, now recognized the business desirability of

eliminating uneconomic competition. For example, Theodore Gary, founder of the Independent Telephone Holding Company, urged: "An effort to make a fair deal with Bell in the interest of the telephone business" (*Telephony*, 1911). The previous year Frank H. Woods, founder of the Lincoln (Nebraska) Tel. & Tel. had worked out a division of territory with the local Bell Company, including interconnection of his exchanges with Bell's long-distance network. At the December 1910 convention of the National Independent Telephone Association, Woods proposed: "... the Independents ask Congress and the state legislature for laws compelling interchange" (MacNeal, 1934, p. 183).

Interconnection required the cooperation of both the Bell and the independents and cooperation was financially less risky than continued price warfare and competition for markets. In this sense, the Kingsbury Commitment's agreement to interconnect was the capstone to internal financial needs of the industry.

Problems after Interconnection with Independents

The tail on Bell's obligation to interconnect with independent systems under The Kingsbury Commitment soon produced new problems. The independent telephone industry had largely grown in small towns and rural areas of the country, ignored by the Bell system. Concurrent with this growth, a large number of independent telephone manufacturing firms developed, showing considerable versatility in equipment and systems design for their own markets.

With acquisition by Bell of several hundred thousand independent stations, interconnection problems arose in three different levels.

First, in an effort to achieve technical uniformity, Bell frequently replaced the equipment in those exchanges with Western Electric-type equipment. Thus, for example, the entire south Los Angeles central offices were reconverted from automatic dial service instituted by its previous independent owners to manual common battery service (California, 1948). Since Bell drew its entire switching supply from Western Electric, this type of changeover foreclosed the growth and replacement markets to the independent manufacturing industry. The acquired exchanges were now interconnected with Bell as part of the latter's system, and in this sense, the interconnection problem was "solved" for these exchanges.

A second form of interconnection problem resulted from the efforts of the remaining independent exchanges to obtain interconnection with Bell's long-distance network. While the signal supervisory techniques developed by independent manufacturers sometimes surpassed those generally available in Bell plants, there were real questions of compatibility as well as market supremacy underlying the resulting disputes.

A third interconnection problem arose with customers who had been furnishing their own terminal apparatus, including private branch exchange equipment. For financial and other reasons, the independents were very tolerant in permitting the use of subscriber terminals on their lines.

On occasion, the subscribers objected to the change in interconnection policy. These matters were submitted for resolution to the state regulatory commission. It is interesting to review the arguments presented by Bell, arguments that state commissions almost unanimously adopted as their own. These arguments were basically of three types.

First was Bell's claim that public regulators must be able to rely on some responsible source for providing adequate service. Private individuals who have as their primary objective their own economic and service advancement cannot be relied on to shoulder the burden of "total service responsibility" PUR 1915A, 928; PUR 1915A, 1032; PUR 1915C, 106; PUR 1920E, PUR 1925A).

Second was the challenge to commission authority to require interconnection. This argument in turn had three major subdivisions: (*a*) since a significant portion of customer traffic was interstate in nature, regulation of interconnection was beyond the province of state commissions (PUR 1926C). It is interesting to note that this argument does not appear in any of the state cases after 1934, when the Federal Communications Commission came into existence; (*b*) the proper selection of facilities on the network is a managerial judgment beyond regulatory control (PUR 1928B); and (*c*) the state commission lacked the power to order interconnection to equipment not owned by the telephone company (PUR 1920D).

These two sets of arguments were presented up to 1925. The first argument has assumed modified form, the second has been abandoned, and the third, which still survives, is to the effect that if noncarrier ownership of end instruments is permitted, the telephone company would lose control of the service. Purportedly supporting this argument was detailed engineering evidence allegedly demonstrating the immense technical complexity of providing voice telephony. The network is a nationwide system: "It is only as good as its weakest link." Only the telephone company is effectively concerned with the operations of the entire system and only it can effectively determine how the constituent parts mesh (PUR 1921C; 2PUR(NS) 1934; 3PUR(NS) 1934; 6PUR(NS) 1935).

In affirming Bell tariff restrictions against interconnection with customer devices, state regulatory commissions saw no conflict between the telephone companies' professed concern over public service responsibilities and its private profit motive. A summary of two of these cases may help illustrate the problem.

A lumber company in the state of Washington operated and maintained its own PBX and instruments at the mill in addition to providing grounded circuits from the mill to numerous logging operations scattered throughout its operating area. Without proposing to serve the remote logging operations, the local telephone company sought an order from the Commission to require the lumber mill to replace its PBX with the telephone company PBX. In approving this division in responsibility for providing service, the Washington Commission solemnly stated: "Dividing responsibility and authority in the provision of instruments is apt to result in confusion and trouble and poor service" (PUR 1925A).

Frank King wanted to purchase his extension sets rather than pay monthly rental. He submitted testimony showing that annual rental of a dial business extension was \$15 "while the instrument cost \$13.89 and estimated cost of wiring \$1.50." The Oregon Commissioner, however, denied King's application: "The (protestant) proceeds on the erroneous theory that the company is renting its equipment rather than furnishing a service . . . no important relationship appears between the cost of the instrumentalities . . . and the rates for service." And finally, customer-owned equipment "would result in injury and impairment to the telephone service" (16 PUR(NS) 1937).

The report of the Joint Committee established by the New York legislature in 1915 to investigate the matter is very illuminating on these problems. Despite the 57-year interval between that report and the deliberations of the FCC PBX Advisory Committee in 1971, the similarity between the problems is clear.

Connection With Privately Owned and Installed Equipment:

In the development of the telephone systems in the state a very serious and difficult problem has arisen by reason of the diversity of instruments in use. Many of the independent systems, some of which have been purchased by the New York Telephone Company and its subsidiaries, use in the construction and operation of their lines different styles and types of apparatus, manufactured by various concerns.

It is the claim of the Bell System that it should not be compelled to connect its lines with a privately owned installation because of the inferiority in many instances of the instruments used. . . . It is the claim of the Bell system that no amount of supervision, no matter how thorough, can guarantee satisfactory service over dissimilar instruments. . . .

With this contention the Committee cannot and does not concur . . . Not the telephone company, but the Public Service Commission should have complete supervision and control (a) over the design of installation; (b) over its maintenance; (c) over relocations and extensions; (d) over operation. Perhaps such an extension of the supervisory powers of the Public Service Commission over a privately owned and installed tele-

phone system might render practicable the enforced connection by the telephone company with such privately owned and installed telephone system . . . at the present time the Public Service Commission has not adopted any definite standard for construction, maintenance and operation of telephones, and, therefore, the New York Telephone Company, through its monopoly, fixes the only standard now existing. [N.Y.S. Joint Committee, 1915, pp. 17-19]

INTERCONNECTION RESTRICTIONS BARRING CUSTOMER ATTACHMENTS—STATE REGULATORY ACTIVITY

As nearly as can be determined, the Bell system has always had a policy of restricting customer devices from the message network. The earliest tariffs of public record (1915) contain the classical phrase: “. . . no apparatus or appliance not furnished by the company shall be attached to or used in connection therewith” (PUR 1915C, p. 137).

The acquisition of thousands of independent telephone exchanges and farmer mutual lines had introduced a variety of unstandardized terminal equipment. “Of the thousands of men who went into the business, almost none had any engineering knowledge or any practical experience in the telephone field” (MacNeal, 1934, p. 79). Faced with recurrent capital shortage, many of the independents and almost all the mutuals encouraged customer ownership of station equipment. In acquiring many of these systems, Bell had inherited these former practices.

Although many user facilities had been furnishing adequate services while operating under independent aegis, Bell proceeded systematically to weed out nonconforming equipment. Most users accepted the change. In some instances, customer station apparatus was “sold” back to the telephone company through remission of several months exchange rental, the same apparatus remaining in place while the carrier assumed responsibility for maintenance. In other locations, the equipment was replaced by Western Electric-type instruments.

INTERCONNECTION RESTRICTIONS—PRE-CARTERPHONE CASES ON FEDERAL LEVEL

The creation of the Federal Communications Commission in 1934 added a new forum for controversy over interconnection of noncarrier devices. Prior to the Commission's Carterfone decision, there were at least five major contested proceedings involving interconnection: (a) Recording Devices (Docket 6787); (b) Hush-A-Phone (Docket 9189); (c) Jordaphone (Dockets 9383 and 9700);

(d) Railroad and Right-of-Way Interconnection with Telephone Companies (Docket 12940); and (e) The Telegraph Investigation (Docket 14650).

As is apparent from the following summary of these cases, Bell's hostility to interconnection was as vigorous as it was before state regulatory bodies. However, the nature of arguments used by Bell became more complicated and sophisticated in line with the shift in the character of the approach. Whereas the earlier state proceedings usually involved irate individuals lacking technical resources with but relatively small issues at stake, the pleas to FCC frequently involved larger corporate bodies with extensive knowledge of communication engineering and large communications budgets.

In the proceeding involving recording devices, the Commission conditioned its authorization permitting interconnection with customer-furnished recorders on a requirement that each unit be equipped with a jack and plug arrangement "so as not to impair state freedom of action."

The Commission's denial of interconnection in the Hush-A-Phone case was overridden by the U.S. Court of Appeals. The Court, in an oft-quoted phrase, decided a "subscriber has the right to use his telephone in ways which are privately beneficial without being publicly detrimental."

The Association of State Regulatory Officials (NARUC) interceded in the Jordaphone case involving connection with electronic answering services. Yielding to these jurisdictional concerns, the FCC questioned the need for authorizing the service on interstate calls, but expressed no objection if the state commission found a local need for answering services. State commissions, more concerned with who exercises authority than with the wisdom of its use, have played a persistent role in interconnection policy.

In the late 1950s the railroad industry sought reestablishment of its historic rights of interconnection with the public message telephone network. Again the Commission avoided making a decision by accepting a compromise negotiated between the railroads and Bell.

Interconnection was precipitated as an issue in the Telegraph Investigation of the FCC in 1961 as Western Union Telegraph Company threatened to enter the market for voice services. When the telegraph company retreated, the Commission declined to rule on the matter.

Six basic arguments have been offered by Bell to the FCC in explanation of its refusal to interconnect with "foreign" attachments or facilities. Those submitted in the railroad interconnection proceeding and the responses thereto are sufficiently representative to summarize briefly.

Service Quality

Probably the most important reason urged by Bell is "the desire to furnish high quality service." Bell claims that it must have full control over the design,

installation, operation, and maintenance of all facilities. Division of responsibility would be detrimental to telephone service.

In response the railroads pointed out that because of the dependence of railroad operations on railroad communication, their standards of service were at least equal to, if not higher than, normal Bell standards. Responsibility within the telephone industry has always been divided between thousands of independent telephone companies and within the Bell system.

The Need for Integration

Since telephone service is provided through a system made up of thousands of complicated and delicately balanced parts, these parts must be coordinated by a responsible entity, namely, the telephone company, in order to function effectively.

The railroad answered that coordination had been effectively maintained through 70 years of Bell's interconnection with the railroad communication systems. While Bell's witnesses testified at length concerning the potential harm from interconnection, they failed to furnish a single instance where such harm actually occurred from railroad connections.

Quality of Maintenance

Bell reactivated its long-time criticism of customer-provided equipment that the quality of maintenance of customer-furnished equipment once installed would depend on the customer's own ideas of what is needed and on his willingness and ability to obtain and pay for maintenance service. There would be no assurance that the customer equipment would be kept in satisfactory condition.

The railroads undercut the argument as applied to them by showing in great detail the lengths to which they went to train their staffs and their overriding need for rapid and dependable communication service. Interconnection was essential to railroad operations, for safety of life, public safety, and national defense. The telephone industry, on the other hand, applies higher standards of maintenance in urban areas than in small towns and less lucrative operating territory. The concern expressed by Bell over the need for high maintenance standards did not apply to service in rural areas where farmer mutuals provided the major source of communication.

Equipment Obsolescence

Bell contended that customers providing portions of the facilities used in their telephone service would tend to oppose Bell's technological innovations if this

obsoleted their facilities, thereby retarding the introduction of improved service facilities.

The railroad answered that they were ahead of Bell in adopting improved signaling methods. It was Bell, not the railroads, who had done what they could to stop the replacement of open wire plant with microwave relay by refusing to connect the newer facilities, and "grandfathering" the old. The most conservative organization with regard to rate of equipment obsolescence was the telephone company. They normally improvise "appliques" on older plants to prevent early plant retirement.

Company Responsibility

The fifth reason was that where customer-furnished equipment gave trouble, the public would be disposed to blame the telephone company. But the railroads pointed out that over 90% of interconnected calls are made between railroad personnel and practically all calls are made at acceptable transmission standard.

Effect on Charges to the Public

Finally, Bell argued that interconnection generally will mean increased costs and a need to charge higher rates. Bell's reasoning in this regard ran about as follows. Bell has the responsibility of serving all customers at uniform rates. Customers would elect to furnish their own facilities only when their costs would be lower than Bell's uniform charges. On the other hand, when their costs would be higher than Bell's charges, the customer would take that portion of his communication service from Bell. Since Bell would be left with the more costly portions of the service, the result would mean higher overall cost of service and therefore higher rates to the general public, a burden that would fall largely on the smaller users who are unable to provide facilities of their own.

The railroads' answer briefly was that railroad communication services were initially established because of the unavailability of service and because the telephone companies had concentrated their attention in the more lucrative urban communities. It was only in recent years that the telephone companies extended their plant to points that would enable the provision of communications to the railroads service areas. If there had been "cream skimming," the telephone companies had been the earliest practitioner.

THE CARTERFONE DECISION

The upshot of the FCC decision in the Jordaphone case and the court ruling in the Hush-A-Phone case was a relaxation of the flat prohibitions against

"foreign attachments" in the Bell tariffs. Practice was still a different matter. Bell undertook on the one hand to interpret the exceptions as narrowly as possible and on the other hand to refuse generally to interconnect with customer-furnished terminal devices or systems. The Carterfone case brought this inconsistency to a head.

Carterfone is a device that provides an acoustic coupling to enable two-way communications between the public message network and mobile radio units. Between 1959 and 1966, the Carter Electronics Corporation marketed some 3500 Carterfones. To stop the marketing of these devices, Bell unleashed its standard technical and economic arguments.

In addition to these standard arguments, Bell came up with a few new ones. For example: "If a call (to a Carterfone user) had been placed person-to-person the operator as well as the calling party would have to wait until the desired party was reached . . . we would have circuits connected for an additional period which would increase the cost of service." The examiner, however, rejected these arguments and found

. . . no reason to anticipate that the Carterfone will have an adverse effect on the telephone system or any part thereof. It takes nothing from the system other than the inductive force of the electrical field in the earpiece of the handset. . . . It puts nothing into the system except the sound of a human voice into the mouthpiece of the handset, and that is the precise purpose for which that portion of the system is engineered.

The FCC, upon its review of the Examiner's opinion, went much farther. In a landmark decision it found the tariff provision against "foreign attachments" unreasonable, as well as discriminatorily applied against Carterfone (FCC Reports, 1937).

Our conclusion here is that a customer desiring to use an interconnecting device to improve the utility to him of both the telephone system and a private radio system should be able to do so, so long as the interconnection does not adversely affect the telephone company's operation. . . . A tariff which prevents this is unreasonable; it is also unduly discriminatory. . . . No one entity need provide all interconnection equipment for our telephone system any more than a single source is needed to supply the parts for a space probe. [FCC Release, 1960, p. 7]

The Carterfone decision compelled the Bell system to undertake a fundamental reexamination of its interconnection policies. In December 1968 the FCC permitted Bell to put into effect modified tariffs that permitted customer provision of various terminal devices subject only to two primary reservations: (1) Bell provides (at a charge) an interface device between the customer facilities and the telephone message network, and (2) Bell furnishes the address signaling device (rotary dial or Touchtone pad) with the customer equipment. Over the strong objections of independent manufacturers and users, but without expressing approval, the Commission permitted the new tariffs to go into effect January 1, 1969 (FCC Release, 1968).

IMPLEMENTATION OF CARTERFONE

The Carterfone decision emphasized the desirability of developing publicly useful and innovative devices and systems not heretofore provided by the sole common carrier source while at the same time recognizing the need for continued protection of the network and limiting harmful exposure.

Bell has stressed both these objectives but with differing emphasis in speech and in practice. Bell's board chairman has voiced enthusiasm toward the new interconnection provisions:

We believe that new regulations will open up new communications potentialities for our customers and afford new opportunities for the many fine customers that are making and marketing information-handling devices. . . . We want to make the connection of such equipment as easy as possible . . . we want to find more ways to say "yes" to our customers—to approach these things imaginatively and flexibly. [AT&T, 1968]

The NAS Panel

Bell took full advantage of the opportunity to emphasize the potential "harm" to the network occasioned by the appointment of a special panel of the National Academy of Sciences (1970) to "make an assessment of the technical factors affecting the common carrier/user interconnection area of public communication" without regard to economic and cost implications. Specifically, the Chief of the Commission's Common Carrier Bureau, in a letter dated September 25, 1969, asked the panel to comment on the following matters:

1. The *propriety* of the telephone company—provided network control signalling requirements and *various alternatives* to the provisions thereof by the telephone company.
2. The *necessity* and *characteristic* of telephone company-provided connecting arrangements and various alternatives to the provisions thereof by the telephone company, and
3. Basic standards and specifications for interconnection and the appropriate method to administer them. [Author's emphasis]

In response, the panel came forward with six primary conclusions.

The first conclusion was that "Uncontrolled interconnection can cause harm to personnel, network performance and property" (National Academy of Science, 1970). Of the four-score suggestions offered by intervenors to the FCC tariff inquiry to implement the Carterfone decision, virtually none had suggested "uncontrolled interconnection."

The second observation by the panel was that "the signal criteria . . . relating to signal amplitude, waveform and spectrum are techni-

cally based and valid and if exceeded can cause harm by interfering with service to other users." This second conclusion is not very instructive since there is no question that signal amplitude, waveform, and spectrum are technically based. It is virtually a truism that communication equipment standards must be compatible with one another. It is equally true that existing common carrier facilities are characterized by wide statistical distribution of the signal and spectrum features. The important problems in this regard, to which the panel provided no solution, are what are the consequences of infractions of these standards, with what tolerances, and what is the impact in terms of relative costs and benefits of variation in the Bell standards for signal amplitude, waveform, and spectrum. The panel conclusion stated an absolute, but did not provide an operational tool.

The panel's third conclusion was that "present tariff criteria together with carrier provided connecting arrangements are an acceptable basis of assuring protection." Elsewhere the panel reported four potential "harms" that can arise from interconnection: (a) voltages dangerous to human life; (b) signals of excessive amplitude or improper spectrum; (c) improper line balance; and (d) improper control signals. The protection afforded by the connecting arrangements, referred to in the panel's third conclusion, has limited deterrent effect on customer devices that generate improper spectrum or improper control signals. The deterrent is actually contained in the Bell tariff, which specifies frequency spread and a requirement that the rotary dial address network be furnished by Bell. Improper off-hook and supervisory signals can be generated by customer devices without contravening the tariff, or can be impeded by the coupling device. In fact, impairment of performance and reliability can be introduced by the connecting arrangement required by Bell. The panel was asked whether any connecting arrangements were necessary; if they were, a description of the character of the connecting arrangements and feasible alternatives was requested, but the panel did not respond to any of these questions.

The panel's fourth conclusion was that "present tariff criteria, together with a properly authorized and enforced program of standards development, equipment certification, and controlled installation and maintenance are an acceptable basis of achieving direct user interconnection." This is a fairly broad conclusion containing within itself all the difficult questions for resolution. To be fair to the panel it should be observed that under FCC directive the panel was circumscribed from examining the economic aspects of interconnection. Development of standards may appear to be wholly a technical problem, when, in fact, they are closely interrelated with economic questions. Limiting consideration solely to technical aspects, and excluding economic aspects, may appear to provide a conclusion when, in fact, it may just be preliminary to consideration of many questions.

In its fifth conclusion, the panel noted: "Innovation by carriers need not be significantly impeded by a certification program. Opportunities for innovation

by users would be increased." The successful improvisations undertaken in many allied industries that have been subject to certification procedures is strong evidence that innovation has not, in fact, been blocked by certification procedure, but how much such innovation has been held up is another unanswered question. In contrast, there can be no question but that the opportunities for innovation would be enhanced by reduced strictures on attempts to innovate.

The panel's final conclusion was that "mechanisms are needed to promote the exchange of information among carriers, users and suppliers." This observation was another step in the right direction. The full exchange of information among the affected interests could obviously serve to foster the resolution of the remaining problems with regard to interconnection.

INTERCONNECTION—WHITHERTO?

The PBX Advisory Committee

In March 1971, the FCC established a PBX Advisory Committee (Telecommunications Report, 1971). Although there are hundreds of terminal devices that can provide a useful communication function, the FCC established the advisory unit for private branch equipment presumably as a mechanism to set the field for other terminal devices and attachments. At the opening meeting of the PBX Advisory Committee, the FCC staff chairman provided two salient directives to the industry membership (FCC PBX, 1971). The group was requested to use the report of the Advisory Panel of the National Academy of Science as a starting point for its deliberations. Economic issues would be treated separately and be developed subsequent to generation of the material assembled by the Advisory Group.

The FCC Advisory Committee divided into two groups. The first group, the Technical Standards Committee, was requested to define the electrical parameters beyond which "harm" to the network or personnel could be identified. A second group, the Procedure and Enforcement Committee, was established to develop recommendations for certification, installation, and maintenance of PBX equipment.

Following the lead suggested by the National Academy of Sciences Panel, the Technical Standards Committee broke into four working parties, each of which was requested to address the "harms" potentially to be encountered with interconnection with customer-furnished PBX equipment, such as hazardous voltages, network control signaling, longitudinal balance, and signal amplitude and signal spectra. A recurrent difficulty of the Technical Standards Committee was the inability of any of the common carriers to furnish *any* statistical evidence of "harms" resultant from past interconnections or to indicate their relative significance with carrier-supplied equipment.

The Procedures and Enforcement Committee divided its work among six working parties covering equipment certification procedures, installation procedures, maintenance procedures, personnel licensing, quality control requirements, and laboratory facility requirements for testing. The precedence-making role of the Procedures Committee involves service risks; in developing, testing, licensing, and procedural requirements for terminal equipment of relatively high cost, it may invite prohibitive economic penalties against equipment of much lower unit cost.

The PBX Advisory Committee includes in its membership some of the outstanding professional engineering talent in this country in the field of private branch exchange equipment. The separate committees have met continuously on the average of once a month since their creation, while the working groups have met more frequently with a constant exchange of technical papers.

Representation on the committees includes strong participation from the regulated common carrier industry and their manufacturing subsidiaries, and the independent manufacturing firms, as well as the installation and maintenance organizations. Consumer representation is led by the National Association of Manufacturers.

The Opportunities Ahead

The program that is developing out of implementation of the Carterfone decision represents an area of vast opportunity for increasing customer service features and for innovation in the provision of communications. The FCC PBX Advisory Committee is composed of men of high technical calibre who have conscientiously been seeking to provide a worthwhile series of recommendations to the FCC. Interconnection is fundamentally an economic problem, however, based on technical consideration. To be publicly useful a program must be simple, flexible, and inexpensive to administer so that the potential benefits from interconnection may be realized. There appears to be a tendency to become engrossed in the technical problems and minimize economic solutions. Procedural bottlenecks may be made so cumbersome and costly that the latent benefits of competition will have limited play. The FCC must be hospitable toward interconnection by viewing it as an opportunity to make positive contributions to user service instead of taking a negative approach of accentuating the "harms" that continue to remain statistically undefined. Carterfone has already made a positive contribution as the carriers have accelerated their own equipment innovations. The increased emphasis by the communication utilities on "cost" versus "value" pricing will precipitate new kinds of problems.

The potential opened up by interconnection has its counterpart in the fact that less than a decade ago the large computer main frame manufacturers

asserted the same concerns over customer use of other manufacturer's equipment as the common carriers exhibit today. The spawning of independent peripheral device businesses handling high-speed printers, tape, and disc handlers raised parallel questions by main frame manufacturers over "system integrity," quality of maintenance, and concern over divided responsibility. The greater speeds and complexity of computer peripheral devices make the interconnection problems in telecommunications simple by comparison. Users took the risk. "Foreign attachments" today are a way of life for the computer industry. Thirty years ago the telephone industry was surrounded by users who did not know or care what their terminals consisted of. Today, the telephone industry serves great numbers of highly sophisticated customers who not only are on a level with it technologically, but are anxious and capable to contribute solutions to customers' needs. The impediments cannot endure. As in the computer field, customer attachments will be a way of life.

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EXHIBIT 3.—*"The Early Competitive Era in Telephone Communication, 1893-1920"*

[Excerpt from Law and Contemporary Problems, Duke University School of Law, Spring 1969.]

THE EARLY COMPETITIVE ERA IN TELEPHONE COMMUNICATION, 1893-1920

RICHARD GABEL*

I

INTRODUCTION

A. The Conventional View of Competition and Regulation

There is no general theory of public utility regulation. What often passes for theory is a reconstruction of historical events woven into a pattern of generalization to meet contemporary issues. Thus, while the thesis that "Regulation is the law's substitute for competition" is the legend on the wall of the Michigan Public Service Commission's hearing room,¹ there is scant evidence that those who invoke the slogan have examined the differential impact of market competition and regulated monopoly on price, market development, and innovation. While market competition provides consumers no perfect guarantee of price benefits or rapid technical and operating innovation, it creates a readier climate for such developments than does regulated monopoly. The available historical evidence indicates that, at least in the communications industry, regulation has served to stabilize price and earnings of the carriers, has inhibited innovation in rate structures, and has protected the carriers from the competitive inroads of private manufacturers and suppliers.

The possibility of introducing additional competition in the rendering of communications services has recently come to the fore. Private microwave suppliers have threatened the monopoly of the Bell System over supply of intercity toll services,² and the use of the computer as a switching device has offered the possibility of substitution for established common carrier services.³

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¹ AT&T, PROFIT, PERFORMANCE AND PROGRESS, A STUDY OF REGULATED AND NONREGULATED INDUSTRY FOR BELL SYSTEM USE 64 (1952).

² See Applications of Microwave Communications, Inc., Nos. 16509-19 (F.C.C., designated for hearing Feb. 2, 1966). Despite the opposition of AT&T and Western Union, this application was granted, FCC 69-870 (Aug. 13, 1969).

³ Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities, No. 16979 (Notice of Inquiry), 7 F.C.C.2d 11, 18-19 (1966):

"From the common carriers' standpoint, regulation should extend to all entities offering like services or to none. It is urged that the ability to compete successfully depends on the flexibility required to meet the competition, and that the carriers would be deprived of this flexibility if they alone were restricted in their pricing practices and marketing efforts by the rigidities of a tariff schedule. Thus, we are confronted with determining under what circumstances data processing, computer information, and message switching services, or any particular combination thereof—whether engaged in by established common carriers or other entities—are or should be subject to the provisions of the Communications Act."

These are just two of several developments in technology which could alter the structure of the communications industry.

Potential changes in market or regulatory structure almost invariably breed new explanations for existing conditions, or, as here, recrudescence of old ideology. Thus, in a dissent to the Report of the Presidential Task Force on Communications Policy, the Director of the Office of Telecommunications Management stated,

Experience going back some seventy years has demonstrated that competition in the provision of local telephone service was inherently inefficient and led to poorer quality service at higher cost.⁴

The history of the period of communications competition in the United States, roughly the years 1893 to 1920, is apparently not too well known, and the view that the existence of competition in communications led to inefficiency, poorer quality, and higher cost in telephony is arrived at by a series of logical inferences which ignore the evidence that is favorable to competition. It will be the purpose of this paper to review this segment of domestic economic history and at least to question the contention raised in the preceding quotation.

B. Survey of the Competitive Era

The independent telephone industry began in 1893 with the expiration of the Bell System patents on the telephone handset. From its inception until about 1913 there was limited interconnection between the independent and the Bell exchanges. Refusal to interconnect was, of course, a tool employed in the competitive battle for domination of the industry. Interconnection refusal was not limited to the strictly duplicating situations, but was also extended to service areas where Bell had never chosen to provide telephone service. When competition took the form of overlapping exchanges of rival companies,⁵ the impact on plant requirements was apparent. A subscriber desiring telephone service with access to all users was required to obtain two separate telephone instruments; a separate subscriber loop had to be furnished from each telephone instrument to a central office, necessitating separate central office lines both served by switchboard operators.⁶ There clearly must have been some duplication of facilities and investment under this arrangement.

See also Irwin, *The Computer Utility: Competition or Regulation?*, 76 YALE L.J. 1299 (1967); Irwin *Computers and Communications: The Economics of Interdependence*, in this symposium, p. 360; Dunn, *Policy Issues Presented by the Interdependence of Computer and Communications Service*, in this symposium, p. 369.

⁴ PRESIDENT'S TASK FORCE ON COMMUNICATIONS POLICY, FINAL REPORT app. A, at 1 (1968) (dissent of General James O'Connell) [hereinafter cited as TASK FORCE REPORT].

⁵ In 1907, overlapping territory was estimated at 20%, but this was only about one-third of all exchanges. G. JOHNSTON, SOME COMMENTS ON THE 1907 ANNUAL REPORT OF AT&T (Int'l Independent Tel. Ass'n, Sept. 1908).

⁶ The duplication of subscriber directory services must have been a source of annoyance to business customers.

However, the degree of "inefficiency" and "higher cost" has never been demonstrated, and perhaps it is not determinable.

Early Bell System telephone development took place at the business core of large urban communities.⁷ Since territorial extension by the competing independents was for the most part to contiguous rather than overlapping geographic areas,⁸ the provision of distribution plant must have been more often complementary than duplicative. For the small central offices in use at the time there were no significant differences in cost per line for separate as against combined switching facilities, and, in the absence of interconnection, this could not have materially affected total investment.⁹ Dual services, in the absence of interconnection of the rival companies at the central offices, necessarily required dual telephone instruments, but the instrument and its associated wiring probably made up less than ten per cent of the average investment per station.¹⁰ Any rigorous examination of the effect of competition on communication costs would require knowledge of the capacity and rate of utilization of facilities prior to and subsequent to the inroads made by the independents.

A characteristic of telephone service is that it must be planned for and constructed in anticipation of future demand. A common lament of the Bell System at the time (reflected in reports to shareholders) was that its own facilities were continually inadequate to meet market demand or were not physically located where demand had developed.¹¹ It can be conjectured that where independents did make inroads into Bell territory and literal duplication of service areas occurred, it was largely due to either the unavailability of Bell plant or the promotional efforts and attractive pricing offered by independent operating companies.

In evaluating the charge that telephone competition engendered inefficiency, poorer quality, and higher costs, several considerations must be borne in mind. All competition involves *some* redundancy of plant facilities and work effort. The question is whether the pressure of competing market forces produces a better or cheaper product than a single supply service. The evidence is clear that under a regime of monopoly supply, during the period 1879-93, the system was stagnant. The competitive period following expiration of the Bell patents in 1893-94 resulted in the most rapid rate of growth of service in the history of the industry as well as in a substantial reduction in rates for business and residential telephone service. This comparison alone does not satisfactorily or completely answer the question whether competition was inefficient and costly. Yet with respect to the duplication

⁷ 1910 AT&T ANN. REP. 23-24.

⁸ JOHNSTON, *supra* note 5.

⁹ In 1902 the average switchboard served 225 lines. BUREAU OF THE CENSUS, SPECIAL REPORTS—TELEPHONES AND TELEGRAPHS, table 37, at 33 (1902).

¹⁰ Investment per station at the turn of the century was about \$200. 1911 AT&T ANN. REP. 17. This source shows the average plant cost per exchange station from 1895 to 1911. The concurrent investment in station equipment is estimated at about \$20 per station.

¹¹ 1900-07 AT&T ANN. REPS.

argument for inefficiency we see evidence of plant redundancy within the Bell System itself—duplication and triplication of exchange cable facilities, establishment of second and third wire centers within a few years of opening an initial office. Of course, this evidence may merely attest to the lack of omniscience of a highly centralized, carefully planned telephone organization. But just as Bell spokesmen would argue that a second cable on the pole line does not represent inefficiency or high cost, the independents could insist, during the competitive era, that in a period of extremely rapid growth (created by their existence) *all* facilities were efficient, necessary, and provided at reasonable cost.

The infusion of competition did force a substantial disruption of the operations of the Bell System. Profitability, rate levels and structure, and the whole innovative process were markedly affected by the coming of competition. The Bell System did not take this assault lightly. It changed tactics and practices and ultimately appealed for state intervention—the regulatory process—to stabilize and normalize competitive forces. This history is recounted below for such light as it may shed on the relative strengths or weaknesses of competition and regulated monopoly.

II

HISTORICAL ACCOUNT¹²

A. The Period of Monopoly, 1879-93

The expiration of the basic Bell patents in 1893-94 marked the end of the System's complete monopoly over the telephone field. Since 1879 the Bell System had determined the industry's rate of expansion and the location and direction of service development as well as the charges for such service, deriving handsome profits from its efforts. At the end of 1894, equity ownership of Bell stockholders consisted of \$20 million of common stock and \$18 million of accumulated surplus. Of the common stock, \$5 million represented the original offering (for which \$500,000 in cash had been paid), while the remaining \$15 million came from subsequent issues. The return on this investment was almost forty-six per cent during the period, with declared dividends averaging fifteen per cent or a total of \$25 million.

Monopoly pricing had its counterpart in restricted growth. Although Bell initially contemplated the telephone for use in private line service, it soon saw the advantage of exchange service. However, high rate levels and inadequate facilities combined to prohibit rapid expansion or development. Service was provided by use of iron wire or on grounded circuits with a local battery power source¹³ and was directed to customers located within a mile of the wire center. Since central offices were

¹² This section is based upon the narrative in FCC, PROPOSED REPORT, TELEPHONE INVESTIGATION pt. 2, at 134-66 (1938) [hereinafter cited as WALKER REPORT].

¹³ H. CASSON, THE HISTORY OF THE TELEPHONE 168-69 (1910); BUREAU OF THE CENSUS, SPECIAL REPORTS—TELEPHONES 14 (1907).

usually located in the center of a large urban community's business-industrial area, residential, suburban, and rural service went largely undeveloped.

Public relations were usually ignored during the patent monopoly period while the System concentrated on reaping large profits. As later assessed by the FCC, "the System's attitude toward the public was characterized by arrogance and indifference."¹⁴

B. The Competitive Period: Development of Service

Although its patent monopoly enabled Bell to obtain franchises and establish service in the most lucrative, populous sections of the country, numerous independent telephone companies and manufacturers were formed following the expiration of these patents. While these concerns concentrated their efforts on regions not yet reached by the Bell System, they also offered competing services in many areas already served by Bell. Thus a major effect of the advent of telephone competition was the stimulation and growth of telephone service. An abbreviated summary of this development over the period 1876-1920 is shown in Table 1.

TABLE 1
TOTAL TELEPHONES IN U.S. AT DECEMBER 31 AT FOUR-YEAR INTERVALS,
1876-1920

Year	Total Telephones	Year	Total Telephones
1876.....	2,593	1900.....	1,355,911
1880.....	47,880	1904.....	3,353,247
1884.....	147,715	1908.....	6,482,629
1888.....	194,966	1912.....	8,954,936
1892.....	260,795	1916.....	11,241,432
1896.....	404,301	1920.....	13,411,379

Source: WALKER REPORT, table 32, at 143-44.

Perhaps a clearer image of the effect of competition on telephone development is given by a comparison of the rate of station growth during the period of patent monopoly and in the years immediately subsequent thereto. Table 2 illustrates this effect. Seventeen years after telephone communications had originated there were 266,431 stations operating—all owned by Bell. By the end of 1902, only ten years later, Bell maintained 1,317,178 stations and the independent companies owned an additional 1,053,866. The independents were able to maintain approximately this relative position until 1907, when they owned 3.0 million stations compared to 3.1 million owned by Bell.¹⁵

¹⁴ WALKER REPORT, *supra* note 12, at 561. A more comprehensive discussion of the Bell System's pre-1910 public relations policies can be found in N. Long, Public Relations Policies of the Bell System, A Case Study in the Politics of Modern Industry (Ph.D. dissertation, Harvard Univ., 1937).

¹⁵ BUREAU OF THE CENSUS, CENSUS OF ELECTRICAL INDUSTRIES—TELEPHONES (1932).

TABLE 2
ANNUAL PER CENT INCREASE IN TOTAL NUMBER OF TELEPHONE STATIONS,
1885-1905

Year	Annual Per Cent Increase in Number of Stations
Period of Patent Monopoly 1885-94.....	6.3 (avg.)
Period of Competition	
1895.....	19.0
1897.....	27.4
1899.....	47.6
1901.....	32.8
1903.....	18.4
1905.....	23.1

Source: WALKER REPORT, table 32, at 143; table 33, at 151.

The rise of the independent companies resulted in a substantial amount of service competition during this period. Out of 1,051 U.S. cities with a 1902 population greater than 4,000, 1,002 had telephone facilities. The independents provided exclusive service in 137 of these and Bell in 414; the remaining 451 communities—almost half—received service from two or more companies.¹⁶

The growth which characterized this early competitive era was both intensive and extensive. It was intensive in that it was marked by a higher saturation of development, particularly of residential services, than had been attempted during the period of patent monopoly. It was extensive in that service was extended for the first time to suburban and rural areas. This vigorous pursuit of new markets, engaged in by Bell as well as by the independents, was greatly facilitated by substantial rate reductions bringing the telephone within the financial grasp of a larger consumer group.

In 1907 the Baker-Morgan banking interests gained control of the Bell System and replaced President Frederick Fish with Theodore Vail.¹⁷ Vail substantially reversed a number of Bell policies, emphasizing absorption of the competition in preference to the earlier policy of expansion of Bell-constructed facilities. This change in emphasis resulted in a rapid diminution in the independents' proportion of total industry telephones. The decline continued until the independents' share reached its present ratio of about fifteen per cent.¹⁸

C. The Competitive Period: Rates

As competition increased, the rates Bell had charged during the patent monopoly period decreased significantly. Average revenue per Bell station dropped from \$88

¹⁶ BUREAU OF THE CENSUS, SPECIAL REPORTS—TELEPHONES AND TELEGRAPHS (1902).

¹⁷ WALKER REPORT, *supra* note 12, at 101-02.

¹⁸ As of December 31, 1968, the Bell System had 87 million telephones, while independent companies served 17 million.

TABLE 3
COMPARISON OF ANNUAL EXCHANGE RATES FOR BELL EXCHANGES WITH AND
WITHOUT COMPETITION, 1894-1909

	1894	1909	
	Bell	Bell	Independents
<i>Exchanges Without Competition</i>			
Business Service.....	68.10	36.00	N.App.
Residential Service.....	56.00	23.75	N.App.
<i>Exchanges With Competition</i>			
Business Service.....	78.65	41.25	37.15
Residential Service.....	65.00	22.80	23.25

Source: 1909 AT&T ANN. REP. 25 (chart), 28.

in 1895, the first year of competition, to \$43 in 1907. This effect on Bell System rates was not limited to those exchanges facing direct competition; the same benefit was also extended to patrons in areas where Bell retained exclusive service. As shown in Table 3, these rate reductions were about the same in exchange areas without competition as in those served by other exchanges in addition to Bell. President Vail used this evidence to argue that it was not the competitive forces which were leading to price reduction but cost savings initiated by the company.¹⁹ As there is no evidence of comparable performance during the period of patent monopoly,²⁰ this turns the question slightly. Absent market competition, what incentive did the System have to generate cost economies?

D. The Competitive Period: Development of the Art

During the period of the Bell monopoly, the technical activities of the company were not primarily concerned with, nor organized for, development of the art through its own forces. Rather, effort was directed toward purchasing patents for the purpose of extending company control in the field of telephony. Prior to 1907 little or no attention was given by the Bell System to what came to be known as "fundamental research."²¹

The major developments in the art, up to this point, originated outside the Bell System. The Strowger switch, which made possible the advent of automatic telephony, was invented by an undertaker and manufactured by several of the independent manufacturers,²² while the use of dial telephone service was actually resisted by Bell leadership.²³ The loading coil was developed by Professor Pupin of Columbia

¹⁹ 1910 AT&T ANN. REP. 25-29.

²⁰ WALKER REPORT, *supra* note 12, at 203, 243-50.

²¹ *Id.* at 207.

²² *Id.* at 300.

²³ Theodore N. Vail in 1913 AT&T ANN. REP. 20:

"It has frequently been asserted that the Bell System did not employ automatic switchboards because of patents controlled by others. . . . [It] is not automatic for the subscriber as the subscriber does all the manipulation in the making of a connection."

University around 1905. This coil tremendously improved the quality of telephone transmission, actually making possible, for the first time, a long distance telephone system.²⁴ Perhaps the most significant technical development of the period—and another major innovation from outside the Bell System²⁵—was Lee De Forest's development of the vacuum tube in 1914. There were numerous other developments of the art during this period, but they can be considered more as refinements of toll and exchange service than as major technical breakthroughs.

When Vail reassumed the presidency of AT&T in 1907, he shifted company emphasis from patent purchase and development to the creation of a technical and research staff capable of "occupying the field":

One of the first things that was fully developed in our minds was the necessity of occupying the field; . . . Just as soon as we started into the district exchange system we found out that it would develop a thousand and one little patents and inventions with which to do the business which was necessary, and that is what we wanted to control and get possession of. So from the very commencement we had our experimental department, so-called . . . whose business it was to study the patents, study the development and study these devices that either were originated by our own people or came in to us from the outside.²⁶

The objective of dominating the field and asserting technical leadership in the telephonic and allied arts has served the company well down to the present day. In 1927 J. E. Otterson of the company restated and amplified the Bell System objective in the following words:

A primary purpose of the American Telephone & Telegraph Co. is the defense and maintenance of its position in the telephone field in the United States. Undertakings and policies must be made to conform to the accomplishment of this purpose.

The American Telephone & Telegraph Co. is surrounded by potentially competitive interests which may in some manner or degree intrude upon the telephone field.

The problem is to prevent this intrusion.

. . . .

. . . [T]he best defense is to continue [research] activities in "no man's land" and to maintain such strong engineering, patent, and commercial situation in connection with these competitive activities as to always have something to trade against the accomplishment of other parties.²⁷

Although it is surrounded by other industrial fields such as satellite communications and the computer application to switching and information storage, the Bell System

²⁴ Doherty, *The Bell System and the People Who Built It*, 46 BELL LAB. RECORD 76-83 (1968).

²⁵ *Id.* at 38-46; WALKER REPORT, *supra* note 12, at 415.

²⁶ Testimony of Theodore N. Vail, Record, vol. 2, at 1542-43, *Western Union Tel. Co. v. American Bell Tel. Co.*, 187 Fed. 425 (1911), reprinted in WALKER REPORT, *supra* note 12, at 203 n.7.

²⁷ Memorandum by J.E. Otterson, Jan. 13, 1927, reprinted in WALKER REPORT, *supra* note 12, at 235-36.

now enjoys a controlling position in the field of wire telephony. The strong financial and technical resources of the Bell System, and particularly the research policy initiated by Theodore Vail, underlie its defense against any threatened invasion.

E. Airing the Dispute Over Competition

Despite the greater availability and reduced rates for telephone service, there was public criticism, particularly from the business community, of the duplicate service situations. Much of this criticism was stimulated by the Bell System, but the independents were not loath to build their own "back-fires." Theodore Vail's first annual report to stockholders, which was reproduced and widely distributed to press and public organs, treated the theme of telephone competition at length:

Duplication of plant is a waste to the investor. Duplication of charges is a waste to the user. . . .

. . . [T]he public must pay double charges, on double capital, double operating expenses and double maintenance.²⁸

In two widely disseminated reports, the independents prepared a response to President Vail. They are quoted at some length to obtain the flavor of the controversy:

Previous to 1895, when independent telephony began, it was next to impossible for a small town to get even a toll station established The style and efficiency of the transmitter was the same practically throughout the monopoly and the circuit conditions had undergone little or no change, the lines being mostly grounded circuits of iron wire Operators' service was given very little attention [T]hey failed to properly appreciate conditions peculiar to varying localities [P]robably the strongest ground for complaint was exorbitant rates. . . .

The very first effect of competition was a bettering of the service rendered by the Bell Company by more careful attention to operators' work, the substitution of either common return or metallic circuits for grounded lines, and, the introduction of different grades of service (party lines) by which means they offered cheaper rates with the minimum of reduction in revenue per line to themselves. . . . After these came quickly, the extension of toll lines to small places, and a marked difference in their interest in local conditions.²⁹

[Columbus, Ohio, is cited as an illustration of the beneficial effects of competition.] The Citizens Telephone Company [independent] began agitation for a franchise late in 1898, when the Central Union (Bell) Telephone Company had less than 1900 telephones, with rates near the business district as high as \$96 a year for business telephones and \$48 for residence telephones, and with additional charges for distance beyond one mile or more from the exchange. The rates throughout the city today [1908] are respectively \$54 and \$27 a year for Bell main line business and residence telephones. . . . At the present time each company has in the neighborhood of 12,000 [telephones]

²⁸ 1907 AT&T ANN. REP. 18.

²⁹ J. AINSWORTH & G. JOHNSTON, A DISCUSSION OF TELEPHONE COMPETITION 7-8 (Int'l Independent Tel. Ass'n, Feb. 1908).

[The author goes on to discuss the accessibility of 24,000 stations for about the same total charges as for 1900 stations ten years previously.]

. . . [Duplicate investments] are mostly in the business districts nearest the exchange, where the cable units, by reason of short lengths and the most economical sizes, are cheapest . . .

Switchboards, if not connected, are cheaper separated than combined. . .

Two pole lines may represent waste when they are parallel with no more of a load than could be borne on one. They may have no element of waste with a greater load, or when shared with other wire-using companies. . .

Of the subway and conduit system only that smaller portion is waste which is represented by the costs of opening and repaving the streets . . .

The cost of interior wiring and instruments is duplicated only in proportion to the duplication of telephones.³⁰

The public airing of this controversy over the relative benefits and disadvantages of telephone competition may have had some effect on the informed public. But as in many industrial battles over markets, the most effective weapons were financial and economic. To understand this result, we must examine the Bell System response to competition.

III

BELL REACTION TO COMPETITION³¹

The loss of its patent monopoly in 1893 and the incursion of competition was followed by the Bell System with efforts to destroy or mitigate the effects of the competition. Tactics employed for this purpose during the tenure of President Fish differed markedly from those initiated by President Vail in 1907. In the early period competition was met through rapid expansion of Bell service. In the later period, 1907-20, when the Baker-Morgan financial interests had obtained control of the company, competition was allayed by purchase and absorption of independent properties. In addition to a change in method of expansion, Bell employed other devices which are discussed below in the comparison of the two eras. The change in the Bell System's rate of expansion of telephone service is shown in Table 4.

A. Early Competitive Era, 1894-1906

During the period 1894-1906 the Bell System employed a variety of methods in addition to its expansion policy in meeting the independents. Among these were (1) an active propaganda campaign; (2) refusal to connect with certain independent companies; and (3) refusal to sell telephone instruments to non-Bell companies.

1. *Bell Reprisal: Propaganda Campaign*

Bell's propaganda against the independents took many forms. Its objective was to undermine the competition's interests with the public, with bankers, with legis-

³⁰ JOHNSTON, *supra* note 5, at 6-8, 15-16.

³¹ This section is based upon the narrative in WALKER REPORT, *supra* note 12, at 134-66.

TABLE 4
ANNUAL RATE OF GROWTH IN BELL TELEPHONE STATIONS AND PLANT INVESTMENT,
1885-1912

Period	Average Per Cent Increase in Number of Telephone Stations	Average Per Cent Increase in Plant Investment
1885-94.....	6.3	8.2
1895-1906.....	21.5	15.0
1907-12.....	9.6	8.5

Source: WALKER REPORT, tables 33 & 34, at 151, 152.

latures, and with present or prospective investors. This campaign appears to have had considerable success against the larger independent telephone companies. However, the smaller mutuals and independents, which grew directly out of local community needs and were less dependent on central capital markets, were apparently less affected by the propaganda efforts.

2. *Bell Reprisal: Refusal of Interconnection*

Refusal to connect with independent telephone systems for long distance telephone service afforded Bell a stronger means of curbing the independent movement. Since Bell was the pioneer in this field, its refusal to connect confined independent companies within the limits of the particular territories they served. The independents early recognized this weakness of their position, and they attempted, in 1899, to form an independent long-distance network. The extensive financing required for such an undertaking was to be organized through a consortium including the Peter Widener interest. At the request of Mr. Morgan of the banking firm, Widener withdrew as financial sponsor of the undertaking, and it collapsed shortly thereafter.³² It is significant that the Baker-Morgan group shortly thereafter acquired the Bell properties and made them the nucleus of an even stronger communications system including both the Bell System and Western Union Telegraph Co.³³

3. *Bell Reprisal: Refusal to Sell*

Another weapon employed by Bell against the independents was its refusal to sell telephone equipment outside the System. This encouraged the development and growth of independent telephone manufacturing concerns once the Bell patents had expired, and the three most important independent manufacturers—Kellogg Switchboard & Supply Co., Stromberg-Carlson Telephone Manufacturing Co., and Automatic Electric Co.³⁴—were established during this period. The existence of the in-

³² 69 COM. & FIN. CHRONICLE 1151 (1899).

³³ WALKER REPORT, *supra* note 12, at 99 n.14.

³⁴ It is interesting to note that today these three companies are subsidiaries of ITT, General Dynamics, and General Telephone, respectively.

dependent telephone manufacturing firms encouraged competitive product development. Development of automatic dial service, the supplanting of local magneto by common battery service, development of full manual multiple-operator service, and a number of refinements in relay manufacture can be traced to the efforts of independents during this period.³⁵ Independent innovations in harmonic ringing and signalling systems eventually led to problems of system compatibility when Bell later partially reversed its position and sought interconnection with the independents.

The refusal of the Bell System to sell telephone apparatus to independents failed to stop their competition, so Bell then attempted to acquire control of Kellogg and Stromberg-Carlson. Both attempts ultimately failed through intervention of public authorities, who had them set aside on the ground that they would create a monopoly in the manufacture of telephone equipment.

B. Late Competitive Era, 1907-20

The onset of Baker-Morgan control over the System in 1907 precipitated an abrupt change in Bell's policy toward independents. This reversal was evidenced by a reduction in the rate of Bell System internal expansion coupled with a policy of buying up independent properties. As Table 4 indicates, the average rate of growth of Bell stations in the early period of competition, 1895-1906, was 21.5 per cent; while for the years 1907-12 the annual rate of expansion dropped to 9.6 per cent.

Rapid market expansion had cost heavily in investment dollars, and rate levels were declining so fast that revenue increases lagged investment growth. In successive reports to stockholders, President Fish lamented the decreasing profitability resulting from competition:

[I]n certain localities, rates too low to cover current expenses and necessary allowance for renewal have been offered, to meet similar rates offered by competitors.³⁶

And again in 1904:

In some places in the country, particularly where there has been the demoralizing effect of unintelligent competition, the rates are at the present time too low.³⁷

In his last annual report, President Fish repeated the theme:

[T]he unintelligent views of our competitors as to what rates for service are possible have created conditions in the portions of the country to which reference is now made, under which neither they nor the Bell companies are getting proper returns for the service rendered.³⁸

President Fish's critical remarks about the "unintelligent competition" were stimulated by real events. During the period of patent monopoly, the company had

³⁵ T. GARY, *THE STORY OF THE INDEPENDENT TELEPHONE INDUSTRY* (circa 1935).

³⁶ 1900 AT&T ANN. REP. 10.

³⁷ 1904 AT&T ANN. REP. 10.

³⁸ 1906 AT&T ANN. REP. 12.

enjoyed an average return on investment of nearly forty-six per cent. For the competitive years 1900-06, net earnings on average net investment dropped to the vicinity of eight per cent.³⁹

To meet the competition, as noted above, President Fish had initiated a program of rapid plant expansion. Between 1895 and 1905, Bell System assets nearly quadrupled, rising from \$120 million to \$453 million.⁴⁰ The need for what, at that time, were tremendous additional capital resources, led to control of the System by the Baker-Morgan financial interests and the replacement of Fish by Vail.⁴¹ President Vail, in addition to slowing the rate of company expansion, introduced other major policy changes which effectively challenged the competition's advance. These policies were quite different from those of the early competitive era and are discussed under (1) policy of acquisition; (2) interconnection; (3) sales to independents; and (4) regulation.

1. *Late Competitive Era: Acquisition Policy*

With the curtailment of its own rate of internal expansion, the Bell System, beginning in 1907, launched an aggressive program of acquiring independent telephone properties. The effect of this change in policy is demonstrated by the shift in the ratio of telephones between the two segments of the industry. In 1907 the independents owned 3.0 million stations, while Bell owned 3.1 million. By 1912, there were 3.6 million independent stations and 5.1 million Bell stations.⁴² The proportion of independently owned stations decreased progressively until about 1940.

Bell's acquisition attempts were strongly resisted by the independents, who made complaint to the Attorney General, George Wickersham. They were joined in charging antitrust violations by the Postal Telegraph-Mackay interests, because the Bell System had earlier succeeded in acquiring control of Western Union Telegraph Company, and the physical consolidation of Bell System and Western Union properties threatened to undercut Postal Telegraph markets.⁴³

As a result of these complaints, AT&T vice-president N. C. Kingsbury met with the Attorney General and later in 1913 drafted an agreement which became known as the Kingsbury Commitment.⁴⁴ Under this agreement, the Bell System agreed not to acquire control over any competing company, and it agreed to connect its system with those owned by independents if the latter met Bell System equipment requirements. The Commitment did not restrict the Bell System from acquiring

³⁹ Staff Reports, Exhibit 1360-B, table 84, at 425, prepared for introduction into evidence for the WALKER REPORT, *supra* note 12.

⁴⁰ *Id.*, Exhibit 1360-A, table 7, at 52.

⁴¹ See text accompanying note 17 *supra*.

⁴² 1932 CENSUS, *supra* note 15.

⁴³ Staff Reports, *supra* note 39, Exhibit 2096-D, ch. 3. It is interesting to note that the Bell System's first attempt to unite the telephone and telegraph industries involved the Mackay-Postal Telegraph interests in preference to Western Union. WALKER REPORT, *supra* note 12, at 97-99.

⁴⁴ The Kingsbury Commitment is reproduced in 1913 AT&T ANN. REP. 24-26.

noncompeting telephone companies. Between 1913 and 1917 the Bell System purchased over 241,000 stations from the independents and sold 58,000 stations. During the war years, 1918-19, the Post Office Department assumed control over all telephone properties, and these were the only years after 1912 when the Bell System sold more stations than it acquired.

The competitive milieu created by the Kingsbury Commitment was not viable for many independents, as they were unable to dispose of their properties on favorable terms. Therefore, the independents joined Bell in seeking passage of the Willis-Graham Act of 1921, which permitted the merger or consolidation of competing telephone companies.⁴⁵ Passage of the Willis-Graham Act was construed by the Attorney General as terminating the Kingsbury Commitment, and Bell again undertook an aggressive policy of acquiring independent properties. The intensity of Bell's activity in this regard once again created apprehension among the independents. After some negotiations, the Bell System sent a letter, which became known as the Hall Memorandum, to F. B. MacKinnon, president of the United States Independent Telephone Association. Dated June 14, 1922, this correspondence stated Bell's new policy relative to acquisitions. The Bell System agreed "to make no purchases of, or consolidations with, independents unless demanded for the convenience of the public or unless special reasons existed making the transaction desirable for the protection of the general public service or Bell System property."⁴⁶ Using these two exceptions the Bell System then continued to make such acquisitions of independent properties as it desired.

2. Late Competitive Era: Interconnection

Until the Kingsbury Commitment was entered into in 1913, the Bell System, in varying degrees, refused to interconnect with independent exchanges for long-distance service. President Vail explained the Bell System hostility to interconnection: "Offering a connection with a so-called competing exchange . . . is offering a different service, except so far as they connect the same subscribers, and there it is of no benefit, as either one would serve the purpose."⁴⁷

The independent telephone companies resisted interconnection as well and were active in opposing state legislation which would compel physical ties between competing telephone companies. This viewpoint was expressed by F. B. Mac-

⁴⁵ Act of June 10, 1921, ch. 20, 42 Stat. 27. The legislative history of the Willis-Graham Act is in the ICC official library. 61 CONG. REC. 1983 (1921) (remarks of Representative Winslow):

"The bill was brought to the attention of the committee by those representing a very large majority of the so-called independent telephone companies of the United States.

"... Many of them . . . are skating on very thin ice in respect of their financial operations. . . . [T]hey have represented to the committee . . . that if the opportunity to sell or consolidate is not afforded to them they are liable to go through the condition of bankruptcy . . ."

⁴⁶ WALKER REPORT, *supra* note 12, at 158.

⁴⁷ 1909 AT&T ANN. REP. 24.

Kinnon, president of the United States Independent Telephone Association, before a joint congressional committee as follows:

Representative HUDDLESTON. How does it [compulsory interconnection] ruin an exchange?

Mr. MACKINNON. If an exchange which is now operating successfully is obliged to give up its entire toll system and its connections to another exchange in the same town and which has no money invested in that toll system, it may be that that other exchange . . . can take away the subscribers of the other exchange.⁴⁸

The successful competitor strives to become the surviving monopolist.

It is futile to reflect on what could have been. In view of the opposition by both segments of the telephone industry to interconnection of competing facilities and the general laissez-faire attitude of public authorities, the likelihood of achieving interconnection was remote. Despite the independents' inadequate financial resources (partly due to Bell pressure), had there been full interconnection during the early years of competitive rivalry, it may be hazarded that the structure of the telephone industry would have been more equally balanced. There is little question but that interconnection would have relieved subscribers of the burden of dual instruments and separate directories and lessened the public demand for forced consolidations. The Bell System watchword "Universal Service" could have been achieved without "One System, One Policy."

It may be that the extensive financial resources of the Bell System, with its banker support, would, in any event, have overwhelmed the struggling independent industry. The independents were fragmented and frequently fought as bitterly among themselves as they did against the Bell System. By the time Vail assented to interconnection with noncompeting independents, the relative decline of this segment of the industry was evident. It was a decline brought on by Bell's aggressive acquisition policy and the financial difficulties being experienced by the independents. In part, the inability of independents to secure additional capital is explained by the reluctance of bankers to finance closed systems—exchange areas without access to the outside world through toll interties. During the critical years in which the legislators might have acted, 1893-1907, the public and the companies were disinterested. Policy, in an issue of this sort, is made through the clash of competing interests. Because both segments of the industry opposed interconnection at the time, a salient opportunity was lost.

3. *Late Competitive Era: Bell Sales Policy*

As noted earlier, the refusal of the Bell System to sell telephonic equipment to non-Bell companies proved a failure as a weapon in fighting the independents. With the advent of banker control of the Bell System in 1907, this policy was

⁴⁸ *Joint Hearings on S. 1313 Before the Committees on Interstate Commerce*, 67th Cong., 1st Sess. 8 (1921).

reversed, and sales to independents and on the open market were permitted. There were several reasons for changing the company sales policy toward independents. At the time (1907), the Bell System patent situation was such that the company had almost no exclusive patent protection which would prevent independents from developing satisfactory central office, outside plant, or station equipment. The vigorous development of independent telephone manufacturers, concurrent with the growth of independent telephone operating companies, attested to this fact. By 1907 there were about as many independently owned telephone stations as Bell-owned stations. The independents constituted a sizeable prospective market for Western Electric, Bell's wholly-owned manufacturing subsidiary, and Western sought a share in this independent market in competition with the independent manufacturing firms.

In addition, there were future advantages in undertaking the sale of Bell-Western equipment to the independent operating companies. Vail had initiated a deliberate policy of acquiring independent operating properties and absorbing these into the Bell System. The installation of Bell System equipment into independent plant made for compatibility and uniformity of equipment and rendered later acquisition of such companies more attractive.⁴⁹

4. *Late Competitive Era: Regulation*

Possibly the most significant policy reversal initiated under Vail's tenure as AT&T president was with respect to public regulation. Throughout the period of patent monopoly (1873-93) and the early years of competition (1894-1906) the Bell System opposed government intervention and regulation of the telephone business. This view was wholly consonant with the prevailing industrialist viewpoint. Bankers, however, require more stability and rationality of operations than can be evinced by a cutthroat competitive environment. President Fish was ousted and Vail reinstated as president of the Bell System by the Baker-Morgan banking groups. These large eastern banks had been key witnesses to the creation and operation of the Interstate Commerce Commission and had observed federal regulatory efforts to reduce the rail carrier intransigency which produced "price wars." The ICC was "making good" in its efforts to stabilize markets and price structures in the railroad business without invading private managerial prerogatives. Vail early saw the possibilities of effecting such normalization and stability in the telephone industry.

The opening signal of this reversal of viewpoint was the discussion of "Public Control" in the 1907 Annual Report to stockholders:

It is contended that if there is to be no competition, there should be public control.

It is not believed that there is any serious objection to such control, provided it is independent, intelligent, considerate, thorough and just, recognizing, as does

⁴⁹ This thesis is developed further in Staff Reports, *supra* note 39, Exhibit 2096-D.

the Interstate Commerce Commission in its report recently issued, that capital is entitled to its fair return, and good management or enterprise to its reward.⁵⁰

Two years later Mr. Vail was somewhat more equivocal:

Although there have been abuses in corporate management . . . yet it must be admitted that the tremendous development of utilities in this country as compared with other countries . . . is to a certain extent due to the lack of proscriptive restrictions.

.
We believe that if there is to be control, there should be protection We believe that management or operation by a body without any accountable responsibility [*i.e.*, regulatory commissions] would be prejudicial to the best interests of the service and of the public, and destructive⁵¹

By 1910 President Bell could see the broad picture:

It is not believed that this [integration of service] can be accomplished by separately controlled or distinct systems nor that there can be competition in the accepted sense of competition.

It is believed that all this can be accomplished to the reasonable satisfaction of the public with its acquiescence, under such control and regulation as will afford the public much better service at less cost than any competition or government-owned monopoly could permanently afford

.
. . . [T]his "supervision" should stop at "control" and "regulation" and not "manage," "operate" nor dictate what the management or operation should be

.
If there is to be state control and regulation, there should also be state protection—protection to a corporation striving to serve the whole community . . . from aggressive competition which covers only that part which is profitable.

.
A public utility giving good service at fair rates should not be subject to competition at unfair rates.⁵²

Regulation is a two-sided coin: on one side lies the aspect of public protection—profit limitations, the obligation to provide service at nondiscriminatory rates, and so forth. The other side of the coin bears the aspect of utility protection—including bars to competitive entry, exclusive franchise, and the right of eminent domain. With an insight that was to serve Bell corporate interests well, Vail anticipated the limited inroads that public regulation would make in obtaining the first series of objectives and the extensive benefits conferred by the second. Real power would always rest with those responsible for management of telephone operations, and Vail was always insistent on the distinction between "regulation" and "management." Although the program of acquiring independent properties was being pursued unabated, the

⁵⁰ 1907 AT&T ANN. REP. 18.

⁵¹ 1909 AT&T ANN. REP. 34, 36.

⁵² 1910 AT&T ANN. REP. 23, 32, 33.

combined objective of "Universal Service—One System, One Policy" could not be achieved without political intervention. Bell's response to this limitation was the promotion of regulatory authority in utility commissions.

The Bell System objective of substituting regulation for the rigors of market competition was met. In 1910 Congress enacted the Mann-Elkins amendment to the Interstate Commerce Commission Act, a portion of which conferred regulatory authority over interstate telephone companies on the ICC.⁵³ Between 1910 and 1920 thirty-one states established authority for regulating intrastate operations of telephone companies.⁵⁴

The history of the federal enactment is peculiar in that the original legislative proposal was intended solely to confer appellate jurisdiction over ICC decisions concerning railroad matters on a Commerce Court. In twenty-six parts of the hearings before the House Interstate and Foreign Commerce Committee, there is no testimony or mention of the communications industry.⁵⁵ The original bill, as reviewed by the committee, was amended on the floor of the House to confer authority on the ICC over "telephone, telegraph and cable companies."⁵⁶ Representations of the Bell System with regard to this legislation were made informally. The position of the independent industry was also favorable, as reflected in a letter from J. B. Ware, Secretary of the National Independent Telephone Association, to Senator W. Alden Smith of Michigan.⁵⁷

It is not unlikely that the Bell System shared the view of Samuel Insull, Chicago utility executive, when he told the National Civic Federation that he preferred to "help shape the right kind of regulation than to have the wrong kind forced upon [him]."⁵⁸ With clear-minded dedication, the Bell System did "help shape the right kind of regulation." During these years it furnished legislative consultants to "help and advise" state and federal legislators and to maintain continuing liaison with regulatory commissioners and their staffs.

In the twenty-four years (1910-34) that the ICC regulated telephone companies, the Commission dealt with telephone rates in only four cases, none of which involved issues of major importance. "The Commission undertook no general rate investigations; it acted only on the basis of such complaints as were brought before it. . . .

⁵³ Act of June 18, 1910, ch. 309, § 7, 36 Stat. 544.

⁵⁴ H.R. REP. No. 109, 67th Cong., 1st Sess. 3-4 (1921).

⁵⁵ *Hearings on Bills Affecting Interstate Commerce Before the House Comm. on Interstate and Foreign Commerce*, 61st Cong., 2d Sess. (1910).

⁵⁶ The legislative history of the Mann-Elkins Act is filed in the ICC reference room.

⁵⁷ Letter from J.B. Ware to Senator W. Alden Smith, May 20, 1910, 45 CONG. REC. 6973-74 (1910):

"[T]he Bell interests have in spots furnished service at less than cost, and in many instances without cost for months, and . . . years

"We do not ask the Government to fight our battles, but we do ask for protection against outrageous methods of warfare which are illegal and detrimental to the public welfare. . . . We are not afraid of supervision; we believe in regulation"

⁵⁸ Letter from Ralph M. Easley to George W. Perkins, June 9, 1909, in J. WEINSTEIN, *THE CORPORATE IDEAL IN THE LIBERAL STATE: 1900-1918* at 87 (1968).

In the absence of serious pressure to exert its power in the communications field, regulation went largely by default."⁵⁹

We have the vision of hindsight. President Vail, after four years of operating under the law, enlarged upon his regulatory experience in addressing his shareholders:

Regulation and control by commissions or business courts have . . . become a permanent feature of our economic laws. . . . The few years' experience has brought out prominently both good and bad features, but it has demonstrated . . . a satisfactory solution of the economic problems

. . . .
Business courts . . . will soon bring order and security out of the present uncertainty and be a bulwark against future economic disturbance.

. . . .
. . . [T]he Bell System has no cause for complaint, protest or criticism as to its relations with . . . commissions [R]ight and reason have been the controlling influences in the conclusions reached.⁶⁰

IV

CONCLUSION

In a sense all business enterprise is a flight from competition. The penalties of competition—low or nonexistent profits—may be avoided by superior efficiency, by product innovation or differentiation, or by attenuation of the competitive process through control over supply and price wielded monopolistically or through conspiracy or tacit understanding with competitors. Confronted by the vigorous competitive inroads of independent operating companies, the Bell System sought to escape the unaccustomed hardships of competition by acquiring competitors, by limiting their markets and their services, and by espousing the development of governmental regulatory functions. The public service commissions, which ultimately stabilized rates and earnings, adopted the norms of business policy urged by the System and imposed strictures on the "unintelligent competition." The advantages thus gained by the Bell System over its remaining competition have been parlayed into a practically unassailable market position fortified by political and legal ramparts.

The thesis has been posed that telephone competition during the years 1893-1920 was neither inefficient nor costly but was, on the contrary, productive of benefits sharply outweighing its costs. It was not just the working out of the competitive market process toward the emergence of inevitable "natural" monopoly which destroyed the structure that permitted competition to flourish and its benefits to be enjoyed; it was as much a poorly conceived, Bell-inspired, protectionist regu-

⁵⁹ M. FAINSD, L. GORDON, & J. PALAMOUNTAIN, *GOVERNMENT AND THE AMERICAN ECONOMY* 375 (3d ed. 1959).

⁶⁰ 1914 AT&T ANN. REP. 47-49.

latory policy which failed to preserve such competition as might usefully have served the public interest. This history is irreversible in that private telephone monopoly is established and institutionalized. In the absence of advocates for countervailing interests, the viewpoint of private monopoly has melded with and been espoused by public regulatory authority. The contemporary rationale for communications monopoly has not moved far ahead of Theodore Vail; the words are different, but results and objectives remain the same. In the name of "systemic integrity," "economies of scale," and "unitary planning," arguments have been made for extending the present market and regulatory structure.⁶¹ Yet over the long run, dynamic technology may provide more effective control over communication rates and services than unaided regulation can supply. After years of experience, regulation remains unproved, but the gratifying performance of the competitive marketplace from 1893 to 1920 has been forgotten. Perhaps, if nothing else, the public presumption that regulation is necessarily inspired and informed by the public interest can be re-evaluated in the light of the history recalled above.

Revolutionary shifts in technology and aggressive innovation will be aborted if they do not receive the support of thoughtful public policy. The Presidential Task Force on Communications Policy has suggested that domestic communications satellite service be treated as a regulated monopoly.⁶² The Task Force maintains that spectrum shortage and the limited number of orbital "parking slots" necessitate a single, multiple-purpose satellite system. But any policy must operate within existing technical constraints; policy making only begins at this stage. We must also consider what organizational forms will permit the greatest development of the art, the widest play of operating alternatives, and the most deliberate impetus to novel and experimental application of satellite technology. In a sense we are again at the same threshold that policy makers confronted in 1893 with the opening up of a new industry. Today, as then, policy decisions on market structure and the respective roles of competition and regulation, once made, cannot be easily reversed.

⁶¹ TASK FORCE REPORT, *supra* note 4, ch. 6.

⁶² *Id.* ch. 5. This proposal has not been favorably received by Bell System spokesmen. See Ashley, *International Communications: What Shape to Come?*, in this symposium, p. 417.

EXHIBIT 4.—*Address by Sebastian A. Lasher before the International Communications Association Seminar, Las Vegas, Nev., January 18, 1974*

TELECOM OF THE FUTURE (1985-1990)
FROM A REGULATORY VIEWPOINT

Having accepted your invitation to discuss the future of telecommunications from a regulatory viewpoint, I feel very much like I am in the position of John the Baptist. Now, there's no point in asking John the Baptist what the message is: he hasn't got it. Being an honest man, he'll tell you, "I don't have the message, but there's one on the way, you know, and I'll tell you what to look for so you can spot it when it comes." However, unlike John the Baptist, I have no single prophet to proclaim; but today I would like to discuss with you some of the important things to look for because, depending on how these factors interact and these issues are resolved, the future of telecommunications may be drastically different. First of all, I will touch on some of the thoughts that have convinced me that, *right now* over the next five years, the time is ripe for major change in communications policy. Then I will try to dig into the attitudes and perceptions which may shape the regulatory accommodation to those changes.

The objective of the Communications Act of 1934, "to obtain universal service at reasonable rates," has essentially been accomplished. Over 94% of our households and virtually 100% of businesses have telephone service and the real costs for that service measured as a percent of average income are lower in the United States than in any other country. Consider for a moment the psychology which grows out of such a situation. Dick Gariepy hit the nail on the head on Wednesday when he highlighted the temporary nature of public appreciation for major technological achievements by asking how much we remembered about the U.S. effort which put men on the Moon. Who can name the fourth man to set foot on the Moon? The major technological breakthrough of the century—something we all have dreamed of since childhood, Flash Gordon and all the rest, and in a few short years we no longer appreciate its significance? How short is the span of public appreciation? A typical current attitude might go like this: "So we have the best telephone service in the world, we have the network; so what else is new?" The challenge is gone and it seems to me we need new national objectives going well beyond those expressed in 1934 to rekindle the excitement and public interest in the communications industry.

Added to the fact that we have outrun our stated national objective in a broader sense, there has been an unmistakably sharp and steady decline in public confidence in our social institutions which has been reflected in *all* the public opinion polls. This drop predates the current Watergate problems and extends across the whole spectrum of activities; all the branches of Government, organized religion, labor, and significantly business. Daniel Moynihan feels we are now in a period of reassessment of the role of the American corporation. He further points out that these periods of reassessment seem to be a cyclical experience recurring about every twenty years. For instance, in communications we can recall the Kingsbury commitment in 1913, the establishment of the FCC in 1934, and the AT&T Western Electric consent decree in 1956. It seems to me that the time is ripe again in the mid-70's for this "20 year itch" to manifest itself. I call it a 20 year itch because the attitudes that surround it are so similar to the 7 year itch in marriage. Present arrangements tend to become routine, to be "old hat," and we begin to look toward new relationships which hold both promise and risk. In communications, this attitude might take the form of a reopening of the 1956 consent decree—the Hart subcommittee may be toying with that idea right now.

So we have outrun our stated national objectives and are showing signs of restlessness toward existing structures. Thirdly, confrontation creates change. I categorize the present confrontation into three classes. Very basically, the first class is confrontations between one section of the government and another section of the government. Examples of this government/government confrontation are in the area of the Federal regulatory vs. State regulatory disputes, Current proceedings in North Carolina and the Federal Communications Commission over interconnection as well as the NARUC's court case which

challenge the FCC's specialized carrier decision typify this type of confrontation. A second broad class of confrontation would be where branches of the government are at odds with segments of industry. Yesterday, Larry Harris of MCI covered this government/industry confrontation quite thoroughly, but briefly the widening schism between the Bell system and the FCC over the role of competition, the Hart subcommittee investigations into anti-trust, and the Department of Justice investigations illustrate this type of confrontation. The final category is where one sector of the industry confronts another industry group. Typical examples are the recent court case in Philadelphia concerning systems interconnection by MCI and AT&T, the emerging disagreement between Western Union and Bell as to whether local distribution facilities should be provided under tariff or by contract (intercarrier agreement), the ITT private anti-trust suit against General Telephone and Electronics in Hawaii, and Bell's appeal to the Federal court of GT&E's satellite system approval. Certainly, the resolution of these conflicts may well profoundly affect the future and structure of the communications industry.

Lastly, technology drives change. Looking around our society today—from the tools of warfare to modern medicine—the pace of technology has far outstripped our social mechanisms which put it to use. And judging by Sol Buchsbaum's remarks earlier, this gap is due to get worse—a lot worse. To the government regulator, the on-rushing and ever-increasing stream of technology presents itself as more and more applications and filings, but the mechanisms necessary to determine the “how to put these to use” questions are so fast moving. Over 30 years ago in Chicago, we produced nuclear power, and today we face an energy crisis. In 1962, we had communications satellite technology, and still today not one U.S. domestic satellite is in orbit. It has been well over five years since we could technically and economically make use of higher frequencies in the 900 MHz band for mobile communications, and today no authorization for such operation has been made. The examples are legend and the problem is increasing; and, to use the current jargon, regulation just isn't coping. You all know the feeling of “the faster I go, the behinder I get.” How much longer can we expect that private entrepreneurs will keep investing in R&D when they must look forward to a 5-30 year wait before the Government processes allow them to proceed? I must conclude that the regulatory process—the process itself—is in dire need of streamlining. So there are at least four reasons which convince me we have been building to a period of major change in communications: (1) need for new national objectives; (2) the 20 year itch syndrome; (3) confrontations which create change; and (4) technology driving reform of the regulatory process.

Now let's consider some current regulatory approaches to accommodate these changes. First, I will consider the State regulator's response. I think it is necessary to note that the press of technology has not yet been equally shared by all regulatory bodies. In the exchange areas, where local telephone service is provided, there has been very little technological pressure on the State regulators. As an example, the changes in local service have been slow and evolutionary. It is interesting to note when considering local service that the electromechanical switches whose basic design dates back to about 1900 account for a significant percent of all of those now being produced. As Ray Krause puts it, “It is as if Ford were still producing 50 percent Model T's, and the remainder split between 1950 and 1974 models.” These switches are connected by copper wire pairs to end instruments which bear a striking similarity to the technology used by Alexander Graham Bell in his original installation. Now, I don't mean to overlook the very important series of product improvements that have occurred in local plant, but product improvements can largely be assimilated into an expanding system in a phased and orderly way. Further, these improvements have generally been originated by only a few firms, those affiliated with the operating common carriers.

However, with the advent of multiple suppliers of terminal equipment and of a growing market for data terminals, together with improvements in common control switching mainly achieved by the computer industry, and the precursors of new distribution topologies based upon wideband digital “Pierce loops,” the relatively “quiet life” of the State regulator may undergo a radical transformation. This “quiet life” slowly incorporates modest product improvements into the operational inventory and underwrites the opportunity costs of

more rapid progress by increasingly siphoning revenues from the more dynamic interstate, long-distance toll activity. We can already see the storm clouds on the horizon which signal the impending Federal-State jurisdictional confrontation.

Let me now turn to what I view as the FCC's response to the growing pressure to modernize and streamline its own regulatory process. I see some moves along two lines. The first is to categorize the flood of problems into a fewer number of major policy issues and, through the increased use of broader rule-making procedures, to "regulate by policy." A trend toward this method is unmistakable by any student of FCC actions over the past several years. But the teeth of regulation are still in its role as an adjudicator, and there is a temptation to avoid the nitty-gritty details in a broad rule-making. Therefore, we see in the broad Specialized Carrier decision no pricing rules—only that competitive responses and prices should be "fair." The terms and conditions of the interconnection of specialized systems with the Bell network were sufficiently vague so as to require later clarification in the courts with attendant delays. To sweep the particulars under the carpet in the broad language of a decision is, in effect, to cause more questions, more proceedings, and more regulatory delay. While "regulation by policy" holds much promise, the policy must be phrased in specific enough terms to resolve the issues at stake. To increase the specificity of the policy decisions is to necessarily limit the class of problems to which it can apply or at least to increase the number of exceptions to the decision which require case-by-case resolution. The second, and perhaps most important, is a trend to substitute competitive pressures for regulatory control. Here, I am reminded of a scene from *Fantasia* where Mickey Mouse as the Sorcerer's Apprentice was given a distasteful task of cleaning out the laboratory. Mickey empowers the brooms to carry in the water and causes them to multiply to complete the job sooner. Likewise, the Commission, the Apprentice of Congress, in its frustration over regulating the world's largest corporation, has empowered firms to compete and they multiply. In Mickey's case, things go awry and he is unable to stop or reverse the process and the multiplying brooms all but drown poor Mickey. The final outcome of the FCC's use of competition remains to be seen. However, there are several "real world" problems which must be overcome for this program to succeed.

First, this tendency toward deregulation runs counter to a more wide-spread drift in our society for more and more government intervention and regulation from drugs to safety to environmental effects to advertising to employment practices to wage and price controls.

A second problem when substituting competition for regulation, one that I alluded to earlier, is that it is difficult to envision any groundrules for a free and fair competition in which one of the competitors is burdened with a requirement to subsidize to any significant degree a monopoly service by revenues collected from the competitive services. This places the Federal regulator in square opposition to the current attitudes of the state regulator.

Also, moves toward increasing competition have been met by resistance from the Bell system itself. The AT&T has grown accustomed to its regulated monopoly status over the past forty years, and it is not easy to permeate the entire organization of 1 million employees with new and unfamiliar methods. Here, let me draw an analogy to another large American industry that has undergone grave managerial troubles because of changing special relationships with government. It has been encouraged to price on a cost-plus basis, it has accepted governmental intervention in its financing, in setting specifications for its outputs, and in its pricing and setting of profit levels. It has even had a government agency determine its accounting systems, and this has resulted in very poor cost information and control. This industry has found it very difficult to diversify into competitive markets because of its long-term accommodations to the above intrusions and its resulting isolation in a specialized industrial sub-culture. Much as it now is in vogue to draw analogies with the railroads, the industry I have described here is the aerospace industry. Aerospace firms which have had success in diversifying into competitive markets have generally applied liberal transfusions of outside management with competitive experience, and have inevitably adopted rigorous cost accounting systems. However, to date, Bell employment practices discourage hiring outside management talent, and progress on improving cost accounting

seems very slow. It is no wonder that the Bell system would find it easier to resist competitive inroads than to undergo the major organizational changes which would be necessary to accommodate the rigors of the competitive marketplace.

A final hurdle that the FCC must overcome to stimulate competition is to remove its traditional emphasis on a legalistic approach and on theoretical reasoning concerning what in principle would be beneficial to the public, and to give increasing importance to an explicit concern with the hard realities of economic, operational, and institutional reactions by industry. Did the Domestic Merger Act of 1943, which permitted Western Union and Postal Telegraph to merge, actually result in the realization of the intended objective to create a second firm, apart from Bell, which could realistically compete for the nationwide communications market? Did the private point-to-point microwave decision (above 890) actually result in the realization of communications' intended objective when measured by the growth rate of installed private systems before and after the time of the decision? Did the Communications Satellite Act achieve the objective of this new technology when measured by subsequent overseas communications tariffs and reliability? Did the exclusion of AT&T from international records service in the TAT-IV decision result in public benefits from competition when measured by the charges for international public message service before and after the decision? The task of translating the opportunity to compete into the financial, managerial, and technical capacity to compete is indeed a formidable one. But despite these drawbacks, increased competition has its advantages. I will not dwell on the classic and important efficiency objectives cited by economists. Rather, I will suggest a political rationale. Set in an environment where there is a declining public confidence in its institutions, relying upon an adversary process to resolve very complex issues in which competing and untried technologies converge with differing social and managerial philosophies is not conducive to decisive judgment especially in a collegial or committee forum. Indecision begets delay and criticism, rather than centralized decision mechanisms in which the regulator acts as a representative of the public and where he is constantly beset by protestations of the public who perceive a disadvantage in particular rulings. An alternative which somehow passes the harder decisions on must hold attraction for our regulators. It has been suggested that "the Government should encourage competition or regulation not so much to control the behavior of corporations as suppliers of services, but to guarantee to the consumer the opportunity to exercise his own decision as to what he needs and wants." The operative phrase "to exercise his own decision" highlights the political insight in this suggestion.

In summary, I have attempted to look at the future of telecommunications from a regulator's point of view. The time seems ripe for major change over the next few years. The engine of technology is driving the federal regulator up the wall, and recent development indicate that the "quiet life of State regulators may be ending. The FCC would like to pass along the hard decisions to you and to the body of other customers through the introduction of competition. This is not an easy task for many reasons. Its eventual success depends in no small part on the response of you in this room—the customers. In sum then, the future telecommunications from a regulator's point of view can be almost anything that you as customers want: Do you know what you want? And—will you speak out? I hope so; the next five years may be critical, for this is the period of the "20 year itch" where the opportunities of change seem to outweigh the risks of change in telecommunications.

EXHIBIT 5.—*Correspondence Between Senator Hruska and The White House
Re Testimony of Clay Whitehead*

JULY 25, 1974.

HON. KENNETH R. COLE, JR.
The White House,
Washington, D.C.

DEAR MR. COLE: On July 9, 1974, Dr. Clay T. Whitehead, Director of the Office of Telecommunications Policy, testified before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary of the United States Senate. In his prepared statement, Dr. Whitehead set forth his views

with regard to a number of issues affecting the structure of the nation's domestic communications industry. In response to a question from Senator Hart as to whether his statement reflected the position of the Administration, Dr. Whitehead said, "not as to specifics" but that the statement had been cleared by the Office of Management and Budget. Later Dr. Whitehead stated that the "thrust" of his statement did constitute the Administration's position.

The *New York Times* for July 10, 1974, carried a front page story reporting on Dr. Whitehead's testimony. This story bore the headline captions, "White House Aide Criticizes A.T.&T." and "Administration Hits A.T.&T. As Trying to Extend Monopoly." The *New York Times* story contained the following:

"The Nixon Administration criticized the American Telephone and Telegraph Company today for using its power to persuade the Government to extend its monopoly in communications.

"Clay T. Whitehead, director of the White House office of telecommunications policy made the criticism in a statement that had been cleared by both the Justice Department and the Office of Management and Budget.

"It is unbecoming for a company the size and stature of A.T.&T. to use its legal, political and economic power to extend its monopoly by government fiat to areas where monopoly is not called for," Mr. Whitehead told the Senate Antitrust and Monopoly Subcommittee.

"In my judgment," he added, "the Government cannot let such an effort go unnoticed or unchecked."

In view of the statements by Dr. Whitehead during his testimony and the reporting of his testimony by the *New York Times*, it would be helpful to have your views as to whether his statement as presented to the Subcommittee reflected the considered position of the Administration on the issues which he discussed. It would be helpful to have your response on this point before the Subcommittee resumes its hearings on Tuesday, July 30, 1974.

With kind regards,

Sincerely,

ROMAN L. HRUSKA,
U.S. Senator, Nebraska.

THE WHITE HOUSE,
Washington, July 29, 1974.

HON. ROMAN L. HRUSKA,
U.S. Senate, Washington, D.C.

DEAR SENATOR HRUSKA: I am writing in response to your letter to Ken Cole of July 25, 1974, regarding the Administration's views on S. 1167, the Industrial Reorganization Act, and more specifically the views expressed by Dr. Whitehead, Director of the Office of Telecommunications Policy, in testimony before your Committee on July 9th.

As Dr. Whitehead indicated in his testimony, the specific views he expressed were his own and not those reflecting a considered position of the Administration.

I hope this serves to clarify any confusion that may have resulted from Dr. Whitehead's testimony.

Sincerely,

ROY L. ASH.

Senator HART. Our next witness is Mr. Robert La Blanc. Mr. La Blanc, you may proceed.

STATEMENT OF ROBERT E. LA BLANC, SALOMON BROTHERS, NEW YORK, N.Y., ACCOMPANIED BY WIN HIMSWORTH

Mr. LA BLANC. Thank you, Senator. I would like to introduce my associate from Salomon Bros., Mr. Win Himsworth. I would like to comment if I may on the consequences of the proposals made last year before the subcommittee to break up the Bell System, including divestiture of Western Electric and the divestiture of the operating companies, and a separate Bell Telephone Laboratories as well as

the consequences that the separation of these units of the Bell System would have, particularly as it applies to the stockholders.

I believe that there would be no benefit in such a divestiture to the A. T. & T. shareholders, and almost certainly this would not bring any benefit to the over 70 million Bell System customers whose cost of service, I believe, would increase.

I also believe the operating telephone companies, separated from A. T. & T., and having lost the cost advantage inherent in present vertical integration, would not be any better off.

In addition I feel it is highly doubtful that the components, that is Western Electric, Long Lines, Bell Telephone Laboratories, once divested would be able to achieve the glamour stock status the previous witnesses have stressed. Even if they were able to do so I believe there would be a substantial cost to the 70 million Bell System customers.

I therefore feel that the proposals would not be well founded. I would like to take a minute, if I can, to quickly summarize my testimony rather than go through and read it all.

Senator HART. If you can summarize it, fine. We will order it printed in the record in full.

[The complete statement of Mr. La Blanc appears as exhibit 1 at the end of his oral testimony.]

Senator HRUSKA. Mr. La Blanc, I presume you are guided by your statement in your remarks. Would you indicate the page you are reading from, so we can follow and keep up?

Mr. LA BLANC. Fine. I am on page 4, Senator. I am just highlighting it.

Senator HRUSKA. I understand. We can help the highlighting process if we can follow the tables and references.

Mr. LA BLANC. I am under the heading "Western Electric" on page 4. Previous testimony has characterized Western Electric as operating on its own as a glamour company. We would note that in order for Western Electric to become a glamour growth stock, its performance in terms of both return on equity and earnings growth would have to be substantially improved.

If you note on table 1 we have a listing of glamour growth stocks. The quickest and easiest means of raising the return on equity from the 10.4 percent achieved by Western Electric over the 5-year period would be to increase the sales prices of its products. This would require a general price increase of 11 percent which, in turn, would result in an increase in both the current and future costs to the operating companies which would, therefore, find themselves in the difficult position of earning less on a greater investment.

I point out that the companies would be forced to apply to State and Federal regulatory authorities to increase telephone rates. This increase would fall on the broad spectrum of consumers.

Because such rate proceedings take considerable time to plead, generally making inadequate adjustments for inflation, there would not only be a long lag period during which earnings would be adversely affected, but the uncertainty that profit levels would be adequate even after rate proceedings were completed is certainly in doubt.

Inadequate earnings put service levels in jeopardy and make it increasingly costly for the companies to finance large construction programs needed to provide for growth in demand. Thus, with the inevitable decreases in profits it is difficult to see how shareholders could benefit if Western were to achieve a glamour status.

What is clear, however, is that the higher prices for telephone service would almost surely result, and this could not possibly be considered a benefit to users for telephone service.

There are other ways for Western Electric to improve their return on equity and profits to achieve glamour status other than raising prices. Another possibility would be to expand the sales volume so as to increase earnings growth to match the earnings per share growth achieved by the glamour stocks. Converting Western Electric's net income for the 5-year period from 1967 to 1972 to a comparable earnings per share basis that gives recognition to the Bell System equity investments made during that period yields a 5-year compound growth rate of 11.2 percent. If Western Electric were to have achieved the 14.8 percent growth rate achieved by the average glamour growth stock we estimate that its sales volume, in 1972, would have to have been 18 percent higher than was actually realized. If you used 1973 figures, the figures would be over 30 percent that they would have had to increase their sales volume.

This, we think, would cause major problems, tremendous increase in investment, certainly a larger marketing force, larger sales force, tremendous investment in plant, equipment, and inventories; and frankly I doubt if they could achieve the profit levels the glamour stocks have achieved with the added investment and current expenses they would incur.

I point out, on page 7, that it is doubtful in my mind that competition would be stimulated by Western Electric aggressively attempting to expand its market share at the expense of other manufacturers.

It is difficult for me, looking at Western Electric's pricing structure, which generally is between 60 and 70 percent of the general trade price, to assume that they would not be able to, in essence, crush out the other companies that were in the field.

That certainly raises some very, very interesting questions as to what benefit this competition would achieve. On page 8 I point out that I feel that a divestiture of Western Electric would have serious consequences on the profitability of operating companies, assuming Western would have to raise their prices in order to achieve their glamour status.

I would like to note that on page 9, in the middle, I refer to the price earnings multiples that the independent telephone companies achieved, and it is referred to as 13.2. That figure is incorrect. It should be 13.7. I would like it noted in the record that there is a mistake there.

Basically the proposals made by two previous witnesses in assessing the effects on the A. T. & T. shareholders of such a divestiture propose that the Bell companies, once divested, would achieve the same types of price earnings multipliers that the independent telephone companies achieve.

I have attempted to prove, with my table 3, that I doubt very, very seriously whether the telephone companies, operating independently from A. T. & T., could achieve comparable earnings multipliers without achieving comparable earnings per share growth and comparable returns on equity.

As table 3 shows, the independents have averaged higher growth rates and considerably higher returns, and if these Bell companies were to achieve the multipliers they would have to raise their tariff rates accordingly to achieve those higher returns.

Again that puts an added squeeze on the 70 million Bell System customers. I doubt very seriously then that there is any real advantage in seeing the Bell System operating companies divested.

I doubt seriously whether these companies would achieve the same status as the independent telephone companies do unless they, in turn, achieve the same earnings.

As I point out on page 11, I also feel very strongly that there is no advantage in an independent Long Lines operation, that the planning, that the exchange of facilities, that the close working relationship, and that the partnership that exists between Long Lines and the other members of the Bell System are the reasons why it is such a good business today. But divested from the Bell System I feel very strongly it would not have those inherent advantages.

On page 12, I point out that I doubt seriously whether a separated Bell Telephone Laboratory could become a viable entity. It would necessarily have to change its charter as to the type of research and development it does. That would cause a profit motivated research geared toward specific products that would be available to the public in a short enough period of time, that those profits could be seen by the shareholders of Bell Telephone Laboratories.

I doubt very, very seriously whether a generalized "think tank" could exist in a profitable mode and still provide the same benefits that Bell Laboratories has provided in the past.

It is, therefore, my opinion that the forced divestiture of Western Electric and Bell Telephone Laboratories and the creation of independent operating companies and independent Long Lines would not benefit the stockholders of American Telephone today.

Senator, I would be happy to answer any questions that you might have.

Senator HART. That was a real summary.

Mr. LA BLANC. I tried to. I know your time is very valuable.

Senator HART. Even if you went into full detail, everybody knows when you are in this area, it is difficult. I am especially grateful for the summary.

I have just one question: This relates to the kind of experience that even those people in communications can get a handle on.

It has to do with the experience in Canada where a telephone company sold stock to the public of its captive supplier. Now as I understand it, Bell Canada sold 10 percent of its stock in Northern Electric, and that stock came out at \$15 last December. It now is trading at \$24. That is a P.E. ratio of 11.

It now trades at \$24, or 17 times its 1972 earnings.

What happened to the common stock of Bell Canada: that stock jumped from \$39 to \$44. Now why isn't that a good signal as to what would happen if you did the same thing here with Western?

Mr. LA BLANC. Let me, for one, correct some of the things you said, Senator. We are familiar with Bell Canada. I am very close to the situation. The offering was made at the time at \$15 a share, which based on 12 months' earnings at the time amounted to about a 12-times multiple.

The stock is currently selling at \$21 a share, which amounts to a price earnings ratio of about 12 times the last 12 months' earnings. The stock of the parent company jumped from \$39 to \$44. It has since by the way come back down to \$40. The price improved not because of the sale of Northern Electric by Bell Canada, I might point out, but it is felt by most objective market observers that it popped because of an energy situation that we had here which, in turn, focused on the Canadian market, and the Canadian economy; with 5 percent growth this year in real GNP, estimated; with a very strong currency, an economy that is natural-resource and energy self-sufficient. This caused the entire Toronto-Montreal-Vancouver-British Columbia Stock Exchange to undergo a rather substantial rally.

Bell Canada, serving 70 percent of the Canadian population, very obviously benefited because of that. Second, there is a vastly different situation in my mind between Bell Canada selling 10 percent of its stock, retaining 90 percent, and therefore, control of the company and control of what the company does and how it does and how it devotes its resources and the divestiture of Western Electric.

The two are not comparable, Senator. If you propose to me that A. T. & T. spin off 10 percent of its Western Electric shares that would be comparable. If you propose to me that 100 percent of Western Electric be divested and therefore be an independent company without the coordination of A. T. & T.'s guidance, the research and development from Bell Laboratories, then I have to disagree with you, sir.

Senator HART. Is it the control that would be retained by A. T. & T.?

Mr. LA BLANC. It's the control that Bell Canada maintains of Northern Electric.

Senator HART. I guess I am relating that to A. T. & T. and Western.

You say it would be one thing to suggest divestiture of 10 percent of Western by A. T. & T. Is it a 51-49?

Mr. LA BLANC. Yes, sir.

I have no doubt you could spin out up to 49 percent of it. It might be a way of raising money.

If you use the same multiplier figures, though, that Bell Canada did in spinning out Northern Electric you would find it would enable the Bell System today to raise—let's see: profits last year of Western Electric, 49 percent ownership of that, maybe you could raise \$1 billion to \$1.5 billion that way.

You could probably raise about one-third of what the Bell System needs in external financing during any particular year; and you would be raising that at the 12 times multiple rather than the 8 times multiple the stock is trading at now.

I frankly don't see there is any tremendous benefit in doing it that way.

Senator HART. I said I had only one question. Your answer suggests that you may be able to help us on one other aspect.

I take it that not only you, but Salamon Brothers itself specializes in communications?

Mr. LA BLANC. Yes, sir. We specialize in communications financing. Our last fiscal year we underwrote 11 major bonds issues for communications companies, Bell and the independents. We have worked in the past as financial advisers to some of the newly emerging specialized common carriers.

In our trading area, we trade securities, bonds in particular, of the communications companies that equate to between 15 and 20 percent of all the bonds outstanding in any given year. We trade at least 15 to 20 percent of the \$30 billion of communications bonds that are outstanding.

Senator HART. Then you may have been here when Mr. Whitehead was testifying. He said that he had very little doubt that the recent aggressive campaign of A. T. & T. and other telephone companies to declare a moratorium on competition would happen.

There is little doubt the recent aggressive campaign by A. T. & T. and other telephone companies declaring a moratorium on competition would have a deleterious effect on the development of new communications services by slowing the infusion of capital.

Have you sensed such difficulty?

Mr. LA BLANC. If I understand the thrust of your question, in advising the communications companies that we speak to fairly frequently, we have found something that Senator Hruska referred to before; and that is that there is a tremendous reluctance on the part of investors to invest in an enterprise where there is no assurance on their part that they will have any portion or piece of the market.

The analogy that you used before, Senator, of building a refinery without assurance of adequate supply of crude also works very well in the communications industry.

One of the major reasons, I believe, that we have not gotten much response, for example, in the way of domestic satellite offerings on the part of any of the major companies that went in initially all fired up with enthusiasm about putting up a domestic satellite, has been that they are unable to raise capital to do that because people say, well, what are you going to put on it? What communications? What is your source of communications?

There is really very little that you can assume. The market on the surface looks to be extremely promising. But when you sit down and try to figure out how you are going to serve that market better than it is being served today, serve that market more economically to the user than it is being served today, it is very difficult to come up with enough potential market to justify an investor risking his dollars.

That is really the problem.

Senator HRUSKA. Would the Senator yield?

In the case of the refinery it is a two-way street, isn't it?

The investor would want to know there is enough crude to keep that refinery busy. He would also want to know there is an ample

supply of strategically located distributors and dealerships and retail outlets to consume the product that comes out of that refinery?

Mr. LA BLANC. Senator, I, like Tom Whitehead, am more versed in communications than I am in petroleum; but in the provision of communications over a given distance between two parties, you must have a supplier at one end and a receiver at the other.

Nobody hires one end of the communications line unless he already has somebody he wants to talk to. The analogy with a pipeline not only applies to the crude, and the receiver, but it already is a matter of established fact so far as communications are concerned, because nobody is just going to hire one end to talk to himself.

He already has to have somebody on the other end.

This is one of the tremendous advantages that we have today in the communications system that we have. That is that the standards that were set up and that have evolved over the past hundred years means that virtually anybody on one end of the communications system can talk to anybody else on the other end of the communications system, because there are standards.

That is one of the difficulties that you run into when you consider a free, open interconnection of equipment; that is, will the standards be the same on both ends? Will the signal levels be the same on both ends? Will the maintenance be the same on both ends?

It is not exactly the same analogy as turning on your electric light-bulb. In that case you are taking from the line, but you are not putting anything back in that affects your next-door neighbor.

In communications you are not only receiving information but you are giving it back out. If your signal level is low, for example, and the other person can't hear you and he calls the company and says, "I can't hear him," the telephone company doesn't know whether it is their equipment or whether it is getting a proper signal.

The only way it knows it is getting a proper signal is with the establishment of standards.

Senator HRUSKA. Maybe they would go to court and resolve that controversy. And in the meantime, no customer can hear.

Mr. LA BLANC. And in the meantime who bears the expense of the court battles? It is the 70 million customers of the Bell system.

Senator HRUSKA. Thank you.

On page 11, Mr. La Blanc, you say the reason that the Long Lines have been successful is the close working relationship between Bell Laboratories and Western Electric to meet the needs of long-haul communication users at prices that are suitable and acceptable.

Now you say further:

These benefits have been made possible only by this partnership and system design, development, manufacture, and installation inherent in vertical integration.

Can those items of system design, development, manufacture, and installation be achieved without the mechanism of a vertical integration? Is it likely that that could be achieved?

Mr. LA BLANC. In my opinion, Senator, no. I worked in the past for the Long Lines Department of A. T. & T. I worked in the past for the New York Telephone Co., an operating company.

I had the opportunity to see the close working relationship between the two. Also I spent considerable time working at Bell Telephone Laboratories.

What I meant by the close integration of Bell Laboratories in design, Western in manufacture, and the Long Lines and the operating companies working together was the fact that often decisions that are made in systems design are decisions that are made by systems that will be in use 5 years or 10 years hence, and that will require the obsoleting of certain pieces of equipment; will require the replacement and reuse in other locations of equipment; will require major economic studies as to how these will be done and how these will be accomplished with the minimum amount of disruption.

When you consider what would happen if each of the operating companies were an independent company, with its own investment which it had to protect, and long-haul transmission of information was provided by a separate company with an investment that it was protecting, the planning function, the manufacturing function, the systems design function would necessarily be a year-to-year thing.

You only need to realize how long it takes, for example, for standards to get promulgated throughout the CCITT, or through any of the other voluntary mechanisms that exist worldwide in communications to realize how difficult it is to really produce innovation in a very complex system without a common economic ownership that says, "Yes, I may be obsoleting a piece of equipment that is only 7 years old, but in the long haul, in the long pull, it will be more economical to do that."

You cannot make that unilateral decision when you are making the decision for other companies that have no economic tie to you.

The fact that electronic switching offices are in 500 locations in the United States in the Bell System, and that electronic switching offices are only in about a dozen locations in the independent telephone company territories in the United States, is a good illustration of the point.

That is, the independent telephone companies have no economic incentive, if you will, to move to this new technology and make the advantages of this new technology available to the general-using public unless it is time for them and they have completely depreciated the equipment that they already have.

Therefore, I feel that the common thread of Long Lines and the operating companies, and the Labs and Western Electric, being owned by a single economic entity that can make that decision is an advantage to the user public.

Senator HRUSKA. Your comments in the field of research, the Bell Laboratories part of it, are interesting.

The research business, if there were divestiture along the lines that had been indicated, or that might occur, would pretty well do up Bell Laboratories, wouldn't it?

Mr. LA BLANC. Yes, sir; I believe it would. I read yesterday where it was estimated in 1972 that there was approximately \$1.5 billion spent in the United States by both Government and private corporations on research and development efforts; and of that, approximately

half a billion dollars was spent by the U.S. Government and \$1 billion by private industry.

If you look at the \$1 billion by private industry and recognize that of that, Bell spent approximately 30 percent.

Mr. HRUSKA. Thirty percent?

Mr. LA BLANC. Thirty percent of that. If you look at the electric industry today and recognize that the electric industry, if you put together all of the research and development specifically geared toward generating facilities, transmission facilities in the electric field, you come up with something under 5 percent of that. You begin to get a feeling that perhaps some of the problems that we are facing today in the electric industry, the lack, really, of a nationwide grid, the lack of sharing of power facilities, the inefficiencies that obtain because basically a generating plant only can convert about 40 percent of the Btu capability that it receives from its source of energy into actual electricity to send out to the user could be very, very much improved had they had some form of centralized research and development that would have gone along the same lines that Bell Laboratories had. They didn't because they are a number of smaller companies with no central thrust. There was no thrust on the part of the manufacturers to make their particular generator more efficient in one means or another. There basically is no centralized responsibility in the electric generation community to do a systems design and optimize the components. Optimizing the components of a systems design may necessarily make one component a little more inefficient than the others but in the long run it may make the whole system more efficient. You can get that when you have one operation doing the design. You don't get it when you have got individual people looking at each component and attempting to make that little component the best. It just doesn't work that way.

That is the marvel of the Bell Telephone Laboratories: That it is doing a systems design looking at today, tomorrow, 5 years, and 20 years hence.

When I worked at Bell Laboratories we were working on developments that are only now coming into use because they were economically not feasible at that time.

Senator HRUSKA. How long ago was that?

Mr. LA BLANC. It was 1960, sir; 1960. That was 14 years ago. Fourteen years ago we were working on the technology, digital technology to encode massive amounts of information onto a millimeter wave guide. We had no possible way at the time to do that economically, nor did we have a way in which we could envision using the 1-million-plus conversation capability that a millimeter wave guide would give us.

Today, 14 years later, there is one such system now being installed in field trial; and it will be in general use by the late 1970's in the Bell System. Now cross-sections exist of that size; and because, in the meantime, the advent of integrated circuitry has made the provision of the electronics on the end economically feasible. It is the only way it could happen. Yet those developments were going on then. It is a tremendous resource.

Senator HRUSKA. Well, thank you very much.

That is all I have.

Senator HART. Mr. Hellerman?

Mr. HELLERMAN. Mr. La Blanc, is Salomon Brothers considered A. T. & T.'s primary investment banker?

Mr. LA BLANC. No, sir. We consider ourselves a major investment banker to A. T. & T. as we consider ourselves a major investment banker to virtually any corporation that needs to raise a large amount of money. There are, as I know you know, perhaps half a dozen to a dozen major underwriters on Wall Street; and between those firms we underwrite perhaps 80, 90 percent of all securities that are underwritten.

Mr. HELLERMAN. You mention that your firm has managed securities in the value of \$26 billion over the past 5 years. Could you give us an estimate as to what percentage were represented by Bell securities?

Mr. LA BLANC. Let me see. Let me get just a rough estimate as to how much financing.

Roughly in the last 5 years the Bell System has required on the average of roughly \$20 billion of external financing. Two of these two very large issues were underwritten through the company directly to their own shareholders, the debentures with warrants, and the convertible preferred. That knocks us down to about \$15 billion.

Probably another \$1 billion of that was done through rights offerings of the individual operating company subsidiaries. You are down to \$14 billion. I would say of the \$14 billion of securities that were underwritten we participated as a manager or comanager or a participant in the syndicate on perhaps a third of those. I would roughly estimate \$4 or \$5 billion.

Mr. HELLERMAN. Thank you.

In your statement you discuss the two previous witnesses who testified before this subcommittee on the impact of the structuring of the Bell System, that they made rather broad assumptions. It is your opinion that it is questionable that no operational problems, or technical difficulties would result, if in fact they do exist; and do you consider those problems to be insurmountable, particularly if the Bell companies cooperated?

Mr. LA BLANC. I guess I have the feeling that the country that can put a man on the Moon can surmount virtually any problem. So to say are they insurmountable is ludicrous, really. You can surmount anything you put your mind to. The question I have is are they surmountable and provide some benefit to A. T. & T. shareholders, which is what Mr. Vlachos and Mr. Whiteman stated this divestiture would provide.

And, secondly, as my own personal observation, I would say are they surmountable only at such a cost to the 70 million customers that A. T. & T. serves today, as to providing a practical, social benefit.

Mr. HELLERMAN. Talking about benefits to stockholders, on pages 4 through 8 of your testimony you speak of ways to improve Western Electric's rate of return in order to achieve glamour status. You

discuss raising the prices of the equipment and expanding sales. Why do you not suggest changing the capitalization ratio—where you have 25 percent debt, 75 percent equity? It seems to be a pretty expensive way to capitalize a manufacturing company which is not subject to severe cyclical pressures.

Mr. LA BLANC. First of all, there is the question of whether Western Electric is or is not subject to cyclical pressure. Western to some degree is sheltered by being a manufacturer to the Bell System and having in advance pretty good ideas of the volume of goods that they will manufacture. On the other hand there is no obligation on the part of the operating companies to order from Western Electric; and as we have seen with the slowdown in housing that started back in September and October last year, the operating companies have very rapidly been cutting back on their purchasing of telephone equipment, station sets, key equipment, switching; and that cutback has come rather rapidly, very rapidly to force Western to lay off some 4,500 people. I am not prepared to say that Western Electric is not correct with an equity-debt ratio of 25 percent. We are one of the two major bankers to Western Electric. We raised all of the capital they have done by debt. Very frankly, Mr. Hellerman, if Western Electric were a separate company, and we were handling stock offerings for them and everything else, Salomon Brothers would have a heck of a lot more business to do.

If they decide to run their debt ratio up to 50 percent, we would have a lot more business we could be doing. I am not so sure a 25-percent debt ratio, however, is not proper for a manufacturing operation which, while somewhat sheltered, still has a lot more peaks and valleys in its operation than does the individual telephone operating companies.

I am not also sure that at today's cost of debt that you would have appreciable increase in profit. I could very easily calculate what you would run into if you were to have a 50-percent debt, 50-percent equity calculation. I am not at all sure that you would improve your earnings that much.

Mr. HELLERMAN. You certainly would not have to make the assumption you are going to put out all the debt at this time, but it could have been over a period of years and the average imbedded interest cost for the full 50 percent could have been the same as it is today.

Making that assumption you might find an increase of at least 20 percent on your rate of return.

Mr. LA BLANC. The question is at what price have they been capturing equity dollars from A. T. & T. If you look at the price that A. T. & T., in essence, has been getting by putting in equity dollars in there I am not so sure that an increase in the capitalization would have a major effect on the profitability of Western Electric.

I would be happy to run the calculations for you. I am not convinced personally that a change to the 50-percent from a 25-percent debt structure, which I feel is proper for a manufacturer—it's twice the level of other industrial manufacturing operations in the United States.

Mr. HELLERMAN. If you look at public utilities, under the Public Utility Holding Company Act of 1935, they have a 65-percent debt limit.

Mr. LA BLANC. If you look at the state the public utilities are in today, where Columbia Gas can't sell a preferred issue because nobody will buy the stock—

Mr. HELLERMAN. It's the same point. You can look at the stock of Bell of Canada holding in the stock market, where A. T. & T. is not holding.

Going back to the peaks and valleys of Western Electric, 1969 to 1973, from the annual report it's a steady upward trend on sales, \$4.8 billion up to \$7.037 billion.

It doesn't indicate a very cyclical activity.

Mr. LA BLANC. I would like to look at 20 year's worth of sales before I say it. If you look at the growth in electric utility sales up until last September you could make the same point, that they could be leveraged at 60 or 70 percent.

Today, when they cannot sell equity or debt, everyone with second hindsight is sitting back and saying, "My God, we never realized they were price elastic. We never realized we couldn't support a 60- or 70-percent debt ratio. We never realized we couldn't do the things we wanted to do."

Prudent financial management dictates that you think ahead for a number of exigencies that could possibly occur and not base your entire financial plan on 2, 3, or 5 years' worth of data.

Mr. HELLERMAN. Attached to your statement is table No. 1. You are using that I take it, to show there is a correlation between P/E ratios and rate of return. Or is there a correlation?

Mr. LA BLANC. I would be lying to you if I said there was any predictable way of saying what makes a glamour stock a glamour stock. You can sit down and study a glamour stock. You can sit down, for example, as Mr. Vlachos did, and say Polaroid is a glamour stock. It has a key place in the photographic industry; it is new and imaginative, has competitive photographic products.

In spite of the fact that their average compounded rate of growth over the 1967 to 1972 time frame was a minus 7 percent they still commanded a 72 times price earnings price multiple. That defies it. It defies it until investors sit down as they did a week ago and say: Where is Polaroid going?

All of a sudden, Polaroid dropped like a rocket in price and is no longer a glamour growth stock.

When we looked very carefully at the characteristics of what makes a stock a glamour growth stock we came up with two items that appear to be a common thread.

One is that these stocks seem to enjoy a much higher return on average common equity than other stocks, general stocks, the 425, the 500.

The second thing is that these stocks seem to enjoy a growth in earnings per share that is far higher than the average company.

This, with the exception of some flukes such as Polaroid apparently was—but obviously now is not—is the thing that seems to distinguish

a glamour growth stock. When we were examining "would Western Electric be a glamour growth stock?" we used as our criteria the same criteria that appeared to us to be the common thread with the other glamour growth stocks. That is earnings growth on a consistent basis and high return on common equity.

Mr. HELLERMAN. Well, you certainly have, at least in the last 5 years, a pretty good trend upward on sales as well as in income.

Mr. LA BLANC. Yes. The last 5 years have been an extraordinary period so far as growth of communications has been concerned.

Mr. HELLERMAN. It's also been the period of time where there has been competition, at least the beginning of competition.

Mr. LA BLANC. It has been the same time; yes, sir. You are correct. It has been the same time.

Mr. HELLERMAN. In other words, from your statements about correlation between P/E ratios and rate of return, just because a company doesn't have a high rate of return doesn't mean it will not be viewed by the market as a glamour stock?

Mr. LA BLANC. I do not believe it will be viewed by the market as a glamour stock for very long, as with Polaroid.

Finally, the investor says the time has come when I am no longer willing to pay for the promise when it doesn't come.

I think to a large extent expectations of earnings, expectations of profits, are almost as important in an investor viewing a stock as a glamour stock as history.

They look at history and say history is good, and history tells you they can do it; they have the management team to be able to do it.

At the same time they must expect that this will go on in the future. When, as in the case of Polaroid, they discover there were problems, batteries in the film, packs, things like that, these problems led their expectations for future growth, for future high returns on equity, not to be fulfilled. Then you lose glamour status.

Would the investor have expectations for future positive growth and proven return on common equity for Western Electric unless Western Electric were spun off without any restrictions, free to compete, free to capture as much of the market as they could get out there and capture; in which case I would say there is a chance they might become a glamour, but at what cost? A cost to the telephone subscribers of higher equipment and therefore higher rate costs? And at the cost of probably the crushing of half a dozen of the companies that are in the field today.

Mr. HELLERMAN. You can also see that if Western Electric were divested they could enter any field they like? They could use their expertise, whatever, and that could be viewed as making this a glamour security?

Mr. LA BLANC. Very definitely.

If they were free of the consent-decree constraints, if they were free of the constraints of only being allowed to manufacture goods that were directly for use in the communications industry, they could go off into other fields.

First, I believe, they would effectively stop most of the other competitors in the field for communications. The certainly is not benefiting competition.

Second, if they moved into other fields and started splintering their efforts, manufacturing computers, manufacturing cameras, there is a question in my mind whether the lack of focus on communications would then benefit the public.

Mr. HELLERMAN. You are talking about splintering. You are talking about pretty large chunks of wood.

Mr. CHUMERIS. If counsel will yield, talking about having Western Electric divested and made an independent corporation, if S. 1167 became law, then Western Electric, itself, would be subject to be broken up because it would dominate more than 50 percent of the market.

Mr. LA BLANC. Then there is a question in my mind whether they would become a glamour growth stock, which was the thesis I was suggesting before.

There is no way they are going to become a glamour growth stock if they are divested and put under the same strictures, or essentially the same kinds of strictures, they are operating under today. In which case I see no advantage to the A. T. & T. shareholder. I can in fact see the A. T. & T. shareholder, and the 70 million customers of the Bell system today, suffering.

Mr. HELLERMAN. You could have substantial businesses, though, in subscriber apparatus, business communications systems, central office switching equipment, wire, cable, and transmission equipment.

They can be separate companies. They would be very large. You won't lose your efficiencies, economies of scale.

Mr. LA BLANC. If I understand the bill correctly, if they were the dominant force in switching they would then be subject to the same constraints. If they were the dominant force in cable they would be subject to the same constraints. Today, if you can buy another crossbar switching system for 50 percent of what a comparable system costs buying it from Stromberg-Carlson or somebody else, don't you think this new Western Electric switching company is going to dominate that field? If it does, aren't you putting them in the same position?

Mr. HELLERMAN. Except that in the proposed legislation if you can show the necessity for maintaining that size, and that if you were broken up that you would lose economies of scales, then you would be exempt from that.

Mr. LA BLANC. Then I would propose that that is probably the situation that would obtain with Western today.

Mr. HELLERMAN. With respect to Western Electric, you say in your testimony that if Western Electric provides equipment to the Bell System operating companies at prices which average 60 to 70 percent of the trade prices paid by telephone companies—independent—

Mr. LA BLANC. Where are you?

Mr. HELLERMAN. Page 5.

Mr. LA BLANC. Yes.

Mr. HELLERMAN. Where did those figures come from?

Mr. LA BLANC. The testimony that was filed last year and from the testimony that I am familiar with—

Mr. HELLERMAN. The A. T. & T. testimony?

Mr. LA BLANC. Yes, sir. And the testimony filed in the New York State rate case in which I participated.

Mr. HELLERMAN. According to the A. T. & T. 1973 Annual Report, the price level of Western Electric communications products ranged between 10 and 35 percent less than the price of similar equipment offered by other manufacturers.

Mr. LA BLANC. The 60 to 70 percent, if my memory serves me correctly, is a weighted average which takes all products that are sold in proportion to the number and size that are sold and compares them against comparable outside prices.

I can definitely see a 10- to 35-percent range if you want to talk about one piece of gear against another piece of outside gear.

My understanding is when you weigh the prices in proportion to the volume of goods that are sold that the general average is 60 to 70 percent.

Mr. HELLERMAN. When you buy a piece of equipment you don't buy an average. You buy a particular piece of equipment. Should it be those prices which should be compared?

Mr. LA BLANC. Yes. If you are buying a piece of cable, and the Western price is \$10, and somebody else's price is \$10.05, you are cheaper with Western by a nickel. If the other people's prices are \$9.95, then the others are cheaper.

You should be buying theirs. If you only buy one cable, or if the cable you buy is only worth \$100, and the switching equipment you buy is worth \$1 million, then the saving of a nickel on \$100 worth of goods, in comparison to the saving on a million dollars worth of goods, is more significant. That is why the weighted average is used, as I understand it.

Mr. HELLERMAN. Are you saying the statement in the annual report is misleading or inaccurate?

Mr. LA BLANC. No, sir. I am saying that statement in the annual report compares one piece of gear with one piece of gear. The statement in my testimony compares the overall weighted average of goods bought by the telephone companies.

Mr. HELLERMAN. Thank you.

Would you agree that the main areas of equipment competition are the PBX and key system areas for Western Electric?

Mr. LA BLANC. Main areas?

Mr. HELLERMAN. Areas of competition.

Mr. LA BLANC. Competition as it is constituted today?

Mr. HELLERMAN. In the equipment field.

Mr. LA BLANC. I would say the main areas of competition today would be probably the PBX and key system field.

Mr. HELLERMAN. According to the testimony given by a Pacific Northwestern Bell Co. representative, Mr. Kamps, in the spring of 1973, before the Oregon Public Utility Commission, with respect to the comparability of Western Electric prices with general trade suppliers, the prices of Western dial PBX equipment are very close to 100 percent the price of independent manufacturers.

Would you care to comment if Western Electric has their great economies of scale, great efficiency, why is it that in that Oregon

proceeding testimony to the effect that prices for dial PBX's were almost equal to non-Western-supplied equipment; and why is it that the Bell Telephone Cos. are themselves going outside of Western Electric to buy PBX equipment?

Mr. LA BLANC. The operating companies have an independent responsibility to buy the best gear at the best price they possibly can to fulfill their needs.

If new technology comes along, wherever it might come from, whether it be Northern Electric, or A.E., or Stromberg, the operating companies have a responsibility to buy it. I think this is one of the marvelous things that goes on within the Bell System. That is that you have got an internal supplier competing with outside suppliers; and if the outside supplier has better or less expensive gear, they get it irrespective of the fact there is a company affiliation.

I have no direct knowledge of the data that was used in the Pacific Northwestern Bell case. I am sure it is the same kind of data that Mr. Richard Wolf filed before the FCC on comparability of prices.

The principal reason that Western Electric has put out tenders and bids for outside suppliers of cable is that cable technology has advanced to the point where other suppliers of cable can, in fact, supply cable at prices competitive with Western. When it can, Western takes advantage of that. The operating companies benefit. The operating companies benefit, and then the users benefit.

Mr. CHUMBRIS. If counsel will yield on this point also. The instance of testimony at Oregon PUC that Mr. Hellerman just used seems to vary with the theory that this hearing began last July 30, 31, August 1 and 2, when one of the theories in breaking Western Electric away from A. T. & T. was the fact that Western Electric was selling to the component subsidiaries products at a lower price because of the economies of scale at Western, and the independent manufacturers were thus being injured because they couldn't compete with Western Electric's price. So this reference to Oregon Public Utility Commission seemed to be inconsistent with the record that we developed last year.

Thank you.

Mr. HELLERMAN. Mr. La Blanc, at the bottom of page 9 and top of page 10 of your testimony you indicate that the separation of the operating companies from the technology, operating, financial, and cost benefits of vertical integration with A. T. & T., Western Electric, and Bell Labs would not be viewed favorably by investors.

With respect to financial benefits, isn't it true that when companies are continuously going to the market for large amounts of funds that it gets progressively more difficult to sell those securities? And isn't there a premium extracted from the market, say, in terms of performance warrants or conversion features?

Don't these kickers, if you will, translate into higher financing costs?

Mr. LA BLANC. First let me say that it is difficult for me to believe that financing each of the parts separately would be more efficient or more saving to the telephone customer than financing it under the Bell System umbrella.

There are many, many instances when individual Bell System companies could not have sold securities were they independent companies.

I am well versed on the New York telephone situation in the 1967-70 time frame, first having worked there, secondly having worked with them in attempting to raise capital. It would have been virtually impossible for them to have raised capital were they an independent company.

Secondly, you referred to warrants and the necessity of companies using warrants like that because of the size.

I would also point out that there are warrants outstanding on United Telecommunications, which is an independent telephone company, that used the warrants to raise capital in the same time frame.

There are warrants outstanding in Continental Telephone, which used warrants during the same time to capture dollars from investors.

I would like to point out that Bell has been able, even in these difficult times, to raise the capital when other companies have not been able to, because it has financial integrity and has kept itself with a little bit of operating margin.

I do believe that it would be very difficult for a lot of the smaller companies today to come to the market—as I said before, with the Columbia Gas case—not getting a bid at all. Yet we did not see that same difficulty when A. T. & T. recently marketed \$500 million worth of its bonds, or the same difficulty when Pacific just marketed \$250 million worth of bonds.

Mr. HELLERMAN. If users were able to buy their own equipment without having to worry about problems with interface would that free enormous amounts of capital for A. T. & T.?

Mr. LA BLANC. Let's examine that for a second: 22 percent of the capital investment in the Bell System today is in plant and equipment on customers' premises. That plant and equipment that is on the customers' premises—let's see, I am trying to roughly calculate in my mind—there were 5 million telephones added last year.

The growth in the PBX and station equipment market, which is probably the location that is having the most initial success in inter-connection types of plant, is a market that is roughly \$300 million a year.

If Bell were completely relieved of 100 percent of the responsibility of providing all station equipment it would probably reduce their external financing requirements by perhaps 10 percent.

On the other hand, I would have to go on and ask what is the earnings contribution of that equipment today? Is the earnings contribution of that equipment proportional to the earnings contribution from the rest of the segments of the communications industry; and unless there were repricing effected that would allow each of the segments of the business to be earning comparably, not one providing a greater contribution than the other, I would have a difficult time saying that there would be a tremendous advantage so far as capital raising is concerned.

Mr. HELLERMAN. Companies making 10 percent seems to be awash; but in addition, if the Bell companies also offer their current users

the opportunity of purchasing equipment in place, that would also free up enormous amounts of capital.

Mr. LA BLANC. It has been interesting to me that Western Union has offered for the past 2 years their users the opportunity of purchasing their equipment on their telex, TWX combined network.

There are 100,000 combined telex and TWX customers today, and in almost 2 years of marketing effort they have been able to convince 5,000 users, essentially 5 percent, to purchase their own equipment rather than continue to lease it.

Mr. HELLERMAN. Is that the equipment in place?

Mr. LA BLANC. It is the equipment already in place.

If the same statistics apply to the Bell System I don't think you would make the equivalent of one bond issue a year.

Mr. HELLERMAN. Even if it's part of a bond issue a year, plus the 10-percent savings you indicated is possible on new equipment, that would be substantial.

Mr. LA BLANC. Only if the contribution of that equipment is the same as the contribution to profit of the overall. If the contribution of that equipment is higher toward the total pot of earnings then a loss of 10 percent is significant, and let's face it the people who are going to be most vulnerable to leave the Bell System equipment and go to their own are the ones who were on one end of the average.

If you have an average, somebody is paying a little more and somebody a little less. That is how you get an average. The people paying a little more are the ones who are likely to immediately move, which raises the burden and raises the average on everybody else at the same time it reduces the profit potential that is available to the company.

If it reduces the profit potential then I cannot say you are going to get any benefit from a reduced amount of dollars necessary for the company to raise and support this equipment base that you priced off.

Mr. HELLERMAN. I would like to call your attention to the two documents provided to you before you sat down.

Mr. CHUMBRIS. Before you get into that, would you yield for a moment?

On the question that you raised on New York Telephone Co., had they not been a part of A. T. & T., they may have had some problems.

Now, two parallels have been brought to the attention of this subcommittee already; and one of them is the fact that if the American railroad had a system such as A. T. & T., the American railroads would not be in the financial problem they are in today.

Secondly, the one you just alluded to, in the public service field. Con Edison is having its problems; and had Con Edison been a part of a national power structure, and been in a system such as A. T. & T., Con Edison, and a few of the others around the country that might be in a similar position, would not have the problem that they are facing today.

I understand that it is a problem necessitating possible Federal legislation to help some of the electric power companies. Could you comment further on that?

Mr. LA BLANC. Yes, I could.

It's been virtually impossible for any major railroad in the United States to raise equity capital in the past, I would say, 15 or 20 years. The majority of the capital the railroads have needed for rolling stock has come about through the sale of railroad equipment trusts, which they do not own but only lease, lease the equipment to other people who own it. There are special tax benefits deriving there.

My feeling is that unless you want to get to the point where you are selling crossbar equipment trusts, or selling transmission equipment trusts, that the best way of raising capital is under the present means it is operating under.

So far as the New York Telephone point is concerned, the earnings that the New York Telephone Co. had in the years 1970, 1971, and 1972, even with the higher multiple that the independent telephone companies commanded, would not have been sufficient to put the earnings above book value.

In addition, those companies that operate in New York State, operate under a legal restriction that says the company is not allowed to sell stock below its par value. Even at the higher multiples of the independent telephone companies, what they were trading at at that time, they would not have been able to have commanded a market price, not even assuming problems of market pressure, or the cost to market, anything else, a straight 13.2 multiple times the earnings would not have brought you even close to their par value.

Legally, they would have been restricted from selling.

It's my feeling that the New York company would have followed the same path that we have seen being followed by Consolidated Edison, were it not to have been part of the A. T. & T. system at that time.

Mr. CHUMBRIS. While you are yielding, could I bring up just one point?

Mr. HELLERMAN. Certainly.

Mr. CHUMBRIS. Mr. Whitehead, on page 12, made this statement:

Assuming the subsidy exists, I question whether its elimination would have any noticeable impact on the rate paid by residential users, particularly since the competitive markets involved here account for only 5 percent of the total Bell System revenues.

He goes on and says—

Consumers end up paying for most of the services anyway as business users pass on their higher communications cost in the form of higher prices for goods and services they offer to the public.

Now, of course, the problem I see here is that it is only 5 percent of the total Bell System revenues at this time, but the terminal equipment that is the subject of much debate in these hearings is just beginning. We had one witness, a Mr. Kelly, testify that the first year his company did \$400,000 worth of business, and the next year \$4 million worth of business, 10 times as much.

The following year, his company did \$16 million dollars worth of business, which is another four times as much. So it is 40 times as much within a 3-year period, which means this is a new and growing business, because of the *Carterfone* decision.

So it would seem to me that if terminal equipment is allowed its full growth you would not have 5 percent of Bell's revenues but a

high ratio of competitive equipment to total revenues. Hence, the private user, the house user of telephones will benefit if that ratio is no longer 95 to 5 percent, but might be say, 80-20, or 65-35. Then there would be a great benefit to the private house telephone user because the company would be getting this competitive terminal equipment revenue which would have a very significant effect on the rate base; wouldn't it?

Mr. LA BLANC. There has been testimony submitted before the Federal Communications Commission in a number of dockets recently by the USITA, by United Telecommunications.

There has been testimony submitted before the North Carolina Public Service Commission by Southern Bell, by UT, and Carolina Telephone, all of which goes to the problems of competition and what it would mean.

The general consensus of opinion is that the 5 percent that is represented so far as competition today in the private-line area would cause major cost additions to the user because that 5 percent isn't 5 percent in a vacuum. There is price elasticity between private-line service and message telephone service.

There are also various cost subsidies that take place between interstate and intrastate. In order to effectively compete the communications industry, as we know it today, would need to adjust their pricing on a cost basis which would in turn change those subsidies.

I have seen figures of between \$17 and \$50 as an estimate of what the increased cost per year per telephone subscriber would be with these changes in subsidies.

If you then assume, which you must, that a portion of the equipment that is currently today in use in the home is being supported by the interstate rate base, and you get rid of that subsidy, you are affecting a great deal more than just the 5 percent that Clay Whitehead talked about.

Mr. CHUMBRIS. Thank you very much.

Mr. HELLERMAN. Mr. La Blanc, on the first document I gave you, would you go six pages from the back? They are not numbered pages. There are two paragraphs in the middle that start off "As far as * * *."

Mr. LA BLANC. I don't know if I have it. The paper is so thin. I am six from the back on a page that says "The following matters". Maybe I should go one more.

Mr. HELLERMAN. No. Maybe as I read it you can pick it out. This is part of a letter that was sent by a president, apparently, of one of the Bell companies to Mr. Alvin von Auw, A.T. & T. vice president, April 12, 1973, suggesting things to be discussed at a president's conference.

Senator HART. Have you found the page yet?

Mr. HELLERMAN. It starts out, "Perhaps another item * * *."

Mr. LA BLANC. It is about eight pages back.

Mr. HELLERMAN. It reads:

Perhaps another item would be a reappraisal of our stance on competition. In view of our substantial needs for new capital, is there some prudent way that we can redefine the scope of our responsibility by not trying to compete in areas where others can serve well and in so doing reduce our new capital requirements? Some equipment on a customer's premise offers this possibility.

In the next document, a two-page document, not attached, at the top of the page it says "President's Conference November 9-12, 1970."

This is apparently a summary of a meeting on competition. In the third paragraph "capital limitations have often restricted our ability to pursue a program of upgrading customer services to newer equipment."

These would appear to suggest that at least there are people, in top management, A.T. & T. companies, who seriously consider that terminal equipment sales, or having other people provide terminal equipment, would free up large amounts of capital.

Would you care to comment on that?

Mr. LA BLANC. I participated for a number of years in the planning function of the associated companies in the Bell System. I can unequivocally say that from an operating manager's standpoint, he never has enough money to do everything he wants to do, and that is true whether I am an automobile dealer, and it is true whether I am building gas pipelines, or refineries, or anything else.

It is equally true of telephone management. That you find a man in marketing in the Bell System who feels that he wants to come out with every piece of gear in the entire world on the market is not actually surprising.

That is the role that he plays, and the role that he plays is to get in there and attempt to ferret out customer demands; look for them; try to find products to meet them.

At the same time the management of the company has a responsibility, and the responsibility they have is to balance the needs, balance the capital needs, determine where the effort should be put, and to meet the best overall responsibility.

The trouble with pulling things out of context from conference notes, or suggestions, topics for discussion to expand people's minds, is that you often go and you get every idea that you can possibly think of, because if you want an alert management you have to challenge them with every idea that you can challenge them with.

To say should we investigate it as a way of possibly cutting down capital requirements does not necessarily say that after you answered the question, the answer to the question was yes.

To find a document where a salesman proposed that more station equipment would be offered if we had no capital limitations certainly is true. It certainly is true.

It is true of any business in the world. The question is the function of management is to optimize all possible choices and to provide the best thing. It would be possible for A.T. & T. to offer 2,000 different colors and varieties of telephones, but would it be an efficient thing for the total overall balance of all customers' needs, all shareholders' needs, all employees' needs?

The three functions that management has to continually look at—

Mr. HELLERMAN. Are you aware the top management of A.T. & T. is also considering this method to raise additional capital?

Mr. LA BLANC. I am not aware of it, no.

Mr. HELLERMAN. Could you compare switching equipment used in the communications industry with computers? Could you say they are similar?

Mr. LA BLANC. No. I spent many years working very closely with the computer industry. My associate, Mr. Himsworth, is a former IBM employee. The two of us have had quite a close association with the computer companies. We follow them as a regular course in our responsibility at Salomon Brothers. There are quite a few differences between switching machines and computers. First of all, both of them are similar in that they are operating on data inputted to them, the computer spilling out numbers and results, the telephone switching equipment operating on it and connecting two people together, if you will.

The similarity, however, insofar as reliability is certainly one where that similarity ends. For example, with a switching machine, the system requirement that we have for the No. 1 ESS when I worked at Bell Laboratories was to make that switching machine operate 40 years with only 2 hours of downtime. I recall the first installation, within the first week, the system had undergone 2 hours' worth of downtime. We all went out that night and celebrated. We said, "What the hell! We have 39 good years in front of us because we have the 2 hours out of the way." That was, of course, the first prototype model. They are approaching that now. The current statistics on the 500 ESS's that are in and operating, I believe I read where it was now somewhere around 8 hours.

The average computer system, however, is down 2 hours a day. The ones that are operating full time, 24 hours a day, 7 days a week, are only operated that way when they are installed either in duplicate or triplicate so they can take each individual component out and do routine time.

The similarity is the same, in that the cost and complexity begin to match each other. The similarity ends when you start talking about reliability.

Mr. HELLERMAN. The computer industry depreciates its equipment usually over a 5- or 6-year period of time.

Mr. LA BLANC. That's correct.

Mr. HELLERMAN. The telephone company depreciates its equipment over a much longer span of time.

Mr. LA BLANC. An average of 17.2 years.

Mr. HELLERMAN. Wouldn't you say the depreciation policy of the common carriers may present problems in updating equipment when new technology is available because they are locked into a long payout?

Mr. LA BLANC. I think I quarrel with your words "locked in." I have seen them write off equipment that was no longer practical because a new technology had come along to replace it. On the other hand, with double digit inflation as we have it now, there is no doubt in my mind depreciation reserves are not going to be sufficient to cover costs and that the industry should find a way to make it cover costs. The current proposal before the FCC, to move towards EOG type of depreciation, very definitely will benefit the user and allow

A.T. & T. to recover more of what is likely to be replacement costs when that equipment is replaced.

Mr. CHUMBRIS. Would counsel yield?

Mr. HELLERMAN. Certainly.

Mr. CHUMBRIS. Are you making a distinction between computers used in the commercial and nonpublic utility aspect as against the A.T. & T.'s operations?

Mr. HELLERMAN. Yes.

Mr. CHUMBRIS. There would be a difference there. The problem there is you have A.T. & T.'s equipment as not only a question of how it is depreciated to meet the usual depreciation the company would have, but you have to have in mind how it is reacting with the Commission where you appear for your rate cases; whereas the ordinary computer uses in the private industry has a different approach. As long as he wants to depreciate them in 5 or 6 years, as you noted earlier, Mr. Hellerman, and Uncle Sam says it is okay, that is the way you do it. You have a different problem in the public utility. Do I read that correctly?

Mr. LA BLANC. You read that correctly. In addition, the one point Mr. Hellerman didn't address is the question of whether the computer equipment is obsolete after the 5 or 6 years that the computer companies choose to write it off?

I know of instances where IBM equipment that is 20 and 25 years old is continuing to be used. The fact that IBM wrote it off in 5 or 6 years is irrelevant to the fact of how long it has been used. You can still find key punches, you can still find 1401's in use today on the premises of customers; and it is just as good today as it was 20 years ago.

The question of depreciation and depreciation policy is a financial one in the computer industry to an extent that they have been able to make quantum improvements in technology. They have not been willing to assume the risks on their lease base for that, but that does not mean the user cannot continue to go ahead and use that equipment.

There has been a very good business made by a number of small entrepreneurs who have gone in and through black box attachments, if you will, to IBM's 360 equipment, made that 360 equipment just the same as 370. It is likely to last another 10 years.

The question is, is the equipment obsolete and is there any appreciable benefit to the user by replacing the equipment. If tomorrow a new switching machine came along that would provide considerable benefits to the new user, benefits that he would be willing to pay more than he is willing to pay for equipment that he has now? I have no doubt the Bell System, and any of the telephone companies for that matter, would go ahead and replace that equipment. That is, given regulatory approval to do it, and given approval to go ahead and take a writeoff and be compensated for by the rates.

Mr. HELLERMAN. Mr. La Blanc, I have no further questions. Thank you very much.

Mr. CHUMBRIS. I have no questions, Mr. Chairman.

Senator HART. Mr. Himsworth, is there anything you care to add? Gentlemen, thank you very much.

We plan to go through rather than recessing for lunch. It is my understanding Mr. Nathan is able to stay. Let us take a 5-minute recess.

[A brief recess was taken.]

[The following was received for the record. Testimony resumes on p. 3954.]

MATERIAL RELATING TO THE TESTIMONY OF ROBERT E. LA BLANC

EXHIBIT 1.—*Prepared Statement of Mr. La Blanc*

PREPARED STATEMENT OF ROBERT E. LA BLANC, VICE PRESIDENT, MANAGER, TECHNOLOGY GROUP, SOLOMON BROTHERS, NEW YORK, N.Y., ON BEHALF OF AMERICAN TELEPHONE & TELEGRAPH CO.

THE PROBABLE FINANCIAL CONSEQUENCES OF BREAKING UP THE BELL SYSTEM

My name is Robert E. La Blanc. My business address is One New York Plaza, New York, New York 10004. I am a Vice President and Manager of the Technology Group with Salomon Brothers. I earned a Master in Business Administration at New York University. I did my undergraduate work at Manhattan College where I received a Bachelor of Electrical Engineering degree. Shortly after graduation I joined the Air Force and served as a Base Communications Officer until 1959. From 1959 until early 1969 I was employed by American Telephone and Telegraph Company and the New York Telephone Company in various financial, technical, and managerial capacities. I became associated with Salomon Brothers in 1969.

Salomon Brothers is an investment banking firm with offices throughout the United States and a subsidiary in England. We are underwriters and brokers in addition to making markets at our own risk in all securities markets. Our firm deals almost entirely with institutional investors, and because of our varied activities we are in daily contact with thousands of portfolio managers and traders from banks, corporations, insurance companies, mutual funds, and others. This gives us an up-to-the-minute awareness of the thinking. We also give advice to corporations as to financial matters with respect to the best way to raise capital. In this regard, Salomon Brothers has an investment banking relationship with AT&T, Western Electric, and a number of the operating subsidiaries. During the last five fiscal years, Salomon Brothers managed or managed 612 corporate public offerings with a total value of over \$26 billion, ranking us third or fourth in national standing. Our firm is also leader in the field of private placements. During the last fiscal year, the firm placed 61 financings with a value of \$863 million compared with 77 issues with a value of \$560 million a year ago. Recent figures disclose that Salomon Brothers ranked second in total underwritings managed and first in competitive financings during fiscal 1973. Our net worth at the close of our last fiscal year was approximately \$123 million, ranking us second in size among all United States securities firms. During our last fiscal year we handled over \$200 billion in purchases and sales of securities and are among the largest managers of new debt issues in the United States. We also maintained active markets in all kinds of corporate securities as well as the bonds, notes and bills of the United States Government, state and local governments, and Federal agencies.

In the trading area our utility desk maintains an active secondary market and regularly trades in the debt securities of all of the Bell System companies. Our monthly volume of about \$350 million of Bell debt instruments equates on an annualized basis to about 15% of all Bell debt outstanding.

We provide a broad range of bond market, money market, and equity research services for investors and issuers of securities. One of our specialties in this area is public utility stocks and bonds. As Manager-Technology Group, I direct and conduct complete financial, manager, and technical research and analysis of corporations in the communications, data communications, and computer communications fields in both public utilities and non-regulated companies. In the course of my duties I meet with and give advice to financial officers of these corporations and to investors. I am responsible for writing reports about these companies for our clients and our staff. American Telephone and Telegraph Company and the associated Bell System operating companies are among the companies I follow as a regular matter. Among other

things, my reports form the basis upon which we and our clients make investment decisions. In the area of research, in a survey of major financial institutions in the United States recently completed by Institutional Investor Magazine, I was voted the leading communications industry analyst.

American Telephone and Telegraph Company has asked me to comment from my point of view as an investment analyst on the consequences of the proposals made to this subcommittee to break up the Bell System, including a divestiture of Western Electric, a divestiture of the operating telephone companies, the separation of Bell Telephone Laboratories, and the separation of AT&T's Long Lines Department. Two witnesses have testified that the break-up of the Bell System would be viewed positively by Wall Street, and would basically be good for the shareholders. Both witnesses made rather broad assumptions in arriving at their opinions which certainly must be called into question. For example, it is my opinion that it is questionable that no operational problems or technical difficulties would result. Moreover, on these broad assumptions they asserted that the component parts of the Bell System, once divested, would achieve "glamour" stock status or at least be evaluated by investors at significantly higher multiples than they are today. My testimony will show:

(1) That there would be no benefit in such divestiture to AT&T shareholders and almost certainly this would be a detriment to the over 70 million Bell System customers whose cost of service would increase;

(1) The operating telephone companies separated from AT&T, and having lost the cost advantage inherent in the present vertical integration, would not be better off;

(3) It is highly doubtful that the components (Western Electric, Long Lines, and Bell Telephone Laboratories), once divested, would achieve "glamour" status;

(4) These divestiture proposals are therefore not well founded.

WESTERN ELECTRIC

Previous testimony has characterized Western Electric as operating on its own as a "glamour" company. We would note that in order for Western Electric to become a "glamour" growth stock, its performance in terms of both return on equity and earnings growth would have to be substantially improved. Table I provides a basis for comparison of Western Electric's return on equity and earnings growth for the five years ending 1972¹ with comparable figures for a selected list of glamour growth stocks.

The quickest and easiest means of raising the return on equity from the 10.4% achieved by Western Electric over the five-year period would be to increase the sale prices of its products. From the viewpoint of market demand, such an increase appears feasible in light of previous testimony which has indicated that Western Electric today provides equipment to the Bell System operating companies at prices averaging from 60% to 70% of the general trade price paid by the average independent telephone company. By our calculations, to increase Western Electric's return on equity in 1972 to 22.8%² would have required a general price increase of some 11%. This in turn would have resulted in an increase in both current and future costs of the operating companies which would, therefore, find themselves in the difficult position of earning less on a greater investment. The companies would then be forced to apply to the respective Federal and State authorities for increased telephone rates, which increase would fall upon the broad spectrum of consumers. Because such rate proceedings take considerable time to complete and generally make inadequate adjustments for inflation, there not only would be a lag period during which earnings would be adversely affected, but uncertainty that profit levels would be adequate even after rate proceedings were completed. Inadequate earnings put service levels in jeopardy and make it increasingly costly for the companies to finance large construction programs needed to provide for growth in demand. Thus, with the inevitable decreases in profits, it is difficult to see how shareholders could benefit if Western were to achieve a "glamour" status. What is clear, however, is that higher prices for

¹ This time period was chosen for use throughout this statement to provide comparability with other data previously introduced. Data for period ending in 1973 would not change the basic conclusions.

² The average return on equity by the quoted "glamours," table I.

phone service would almost surely result and this could not possibly be considered a benefit to users of telephone service.

Another possibility for improving Western Electric's earnings performance would be to expand sales volume so as to increase earnings growth to match the earnings per share growth achieved by the glamour stocks. Converting Western Electric's net income figures for the five-year period from 1967 to 1972, to a comparable earnings per share basis that gives recognition to the Bell System equity investments made during that period, yields a five-year compound growth rate of 11.2%.³ If Western Electric were to have achieved the 14.8% growth rate achieved by the average glamour growth stock shown in Table I, we estimate that its sales volume in 1972 would have to have been 18% higher than was actually realized. Since virtually all of Western Electric's sales currently are to the Bell operating companies, future expansions of this magnitude would require new and expanded marketing, sales, and engineering organizations, as well as additional investment in plant, equipment, and inventories. It then becomes doubtful if current profit levels could be maintained without a price increase, thus again bringing pressure on operating company profits.

Several other questions concerning the feasibility of Western Electric's divestiture also would have to be answered. For example, would competition in telecommunications supply be stimulated by allowing a divested Western Electric to aggressively attempt to expand its market share at the expense of other manufacturers in the industry? Since Western Electric's prices now are about 60% to 70% of the general trade, there would be room for substantial price increases (that would be paid for by telephone users). On the other hand, the continuation of such price differences would enable Western to dominate the independent market. It is problematical, however, that a divested Western Electric would be able to achieve the profits necessary to give its stock a "glamour" status. A look at a diversified group of companies against which a divested Western Electric might compete shows why this is so. As shown in Table II, the average price/earnings ratio and return on average common equity for such companies for the periods indicated was 13.2 times and 11.1%,⁴ respectively, of the "glamours" shown in Table I.

In addition, since the mid-1960s, IRS regulations have allowed taxes on profits on sales between Western Electric and the operating companies to be flowed back to the operating telephone companies, thus reducing the depreciable rate base by some \$750 million as of December 31, 1972. This net reduction in consolidated income tax liability is currently aggregating approximately \$60 million per year and is thus benefitting AT&T telephone customers. A separated Western Electric would foreclose these benefits.

For these reasons, I feel that the suggestion that Western Electric would become a "glamour" stock is tenuous at best, and that its divestiture would not benefit either today's AT&T shareholders or, more importantly, its customers.

OPERATING COMPANIES

As mentioned above, a divestiture of Western Electric could have serious consequences on the profitability of the operating companies, assuming Western Electric were to raise its prices. This disadvantage notwithstanding, two previous financial witnesses have testified that the separation of the 23 Bell operating companies from the Bell System would be viewed favorably by the stock market, and that their price/earnings ratios would likely expand to match today's price/earnings ratios of the independent telephone companies.

Table III compares the five-year earnings performance of the eight largest independent telephone companies with the six publicly traded Bell System companies. On a return-on-equity basis, the relative valuations of the independents and the publicly traded Bell System companies appear to be about right. The Bell companies' five-year average was 8.7%, while the independents' average was roughly double that figure. The Bell System market-to-book ratio was approximately 1.0X and the independent companies 1.7X, or roughly the same proportion as the ratios of return on equity. When the price/earnings statistics are examined, however, there appears to be a disparity between the independent companies and the Bell System companies. Here the Bell com-

³ This 11.2 percent assumes that the \$575 million invested by A. T. & T. in Western Electric between 1968 and 1972 was invested at a "glamour" stock multiple of 30 times previous year's earnings.

⁴ The return on equity for the 10 years ending in 1972 was 13.0 percent.

panies' five-year compounded growth rate was 1.6% and the 1972 price/earnings ratio was 12.3X, while the average of the eight largest independent telephone companies' five-year compounded rate of earnings growth was 9.7%, and their price/earnings ratio was only 13.7X. If anything, this would lead me to believe that the independent companies are undervalued relative to the Bell System companies, and if these six Bell companies are representative of the 23 operating companies, Bell's price/earnings ratio, and hence its relative market value, would likely decline relative to the existing independent companies upon the divestiture of such Bell operating companies.

In my opinion, the only way these divested Bell companies could become like independent telephone companies in the investors' eyes would be if they achieved comparable earnings per share growth rates and comparable returns on equity. This in turn would necessitate rate increases again putting the burden on the telephone user. I also find it difficult to believe that separation of the operating companies from the technological, operating, financial, and cost benefits of vertical integration with AT&T, Western Electric, and Bell Telephone Laboratories would be viewed by investors as enhancing earnings per share or return on equity and thus deserving of a higher price/earnings multiplier.

Obviously, then, any further decline in Bell's price/earnings ratio would exacerbate a very serious problem facing the Bell System today, i.e., the company's inability to sell common equity above book value. Sale below book value dilutes present shareholders' equity, unfavorably impacts earnings growth, makes it more difficult for the company to sell its securities, and thus increases the cost of capital. These increased costs not only decrease the attractiveness of the securities to the shareholders and bondholders, but must be passed on to the user—the rate payer, the over 70 million Bell System customers. From time to time some operating companies experience temporarily poor earnings performance and must rely on their association with the Bell System to help them with financing until adequate earnings are restored. It is doubtful that during such times those operating companies operating independently, without Bell System association, could raise common equity at all. For example, during the 1968–72 period the New York Telephone Company experienced difficulty in meeting the service demands of customers. Earnings fell precipitously, and even at the higher price/earnings ratios afforded the independent telephone companies, it would have been virtually impossible to sell stock above book value. Had New York Telephone not been associated with the Bell System during those years, when AT&T invested equity irrespective of current earnings, I venture to say the company would be in serious financial difficulty today. This, in fact, has been noted by the New York State Public Service Commission in its deliberations involving the company's rates.

For these reasons, I believe the hypothesis that the divestiture of the Bell System operating companies from AT&T would benefit AT&T shareholders is not well founded, would not result in the operating company's achieving a higher market valuation than they are afforded today, and would definitely result in an increase in the cost of telephone service to the user.

LONG LINES DEPARTMENT

Another point addressed in the previous testimony was that AT&T's Long Lines Department, if independent, would also be viewed as a "glamour" stock because of its exposure to rapidly changing technology, good profits, and high international growth. The reason, in my opinion, that Long Lines has been successful is the close working relationship between Bell Telephone Laboratories and Western Electric to meet the needs of the long haul communications user, at prices that have encouraged wide-ranging usage. These benefits have been made possible only by this partnership in system design, development, manufacture, and installation inherent in vertical integration. The integration between Long Lines and the operating companies has resulted in increased innovation, improved long range planning, and has resulted in a reduction of duplicate equipment, thus reducing costs. It is my feeling that a separated Long Lines would not enjoy such economies. I therefore find it difficult to believe that the separation of AT&T's Long Lines Department would benefit either AT&T's shareholders or customers.

BELL TELEPHONE LABORATORIES

Lastly, I would like to address the idea that a separate Bell Telephone Laboratories could be a viable entity. I know of no other in-house research organization on the scale of Bell Labs, much less an independent organization, organized to sell either pure or applied research at a profit. In fact, the only way a research and development operation for a particular industry could be viable would be to attempt to optimize short-term profits in any technological discipline, not just the particular industry area. In my mind, strict adherence to the profit motive forces research and development into a product orientation not directed solely towards satisfying telecommunications industry needs. Upon divestiture, Bell Labs would seek to become all things to all men, its expertise would become scattered, intermittent and unfocused, and it would probably lack the funding support which is necessary for major product innovation. In a word, it would become a generalized "think tank," and lose the expertise, funds, and commitment to continuing innovations, including product innovations, which it has contributed to the advancement of communications for so many years.

One needs only to look at the problems of today's electric utilities industry to understand what this lack of a strong research and development organization can mean. In fact, I have heard many prominent electric utilities executives bemoan the lack of a Bell Telephone Laboratories counterpart for the electric industry. It is through the ability of AT&T to devote annually \$170 million of its resources to fund Bell Telephone Laboratories' basic communication research without specific product orientation that has enabled America to have the finest communications system in the world. This \$170 million is in addition to the over \$250 million expended in 1973 by Western Electric on product-oriented research and development at Bell Telephone Laboratories.

It is therefore in my opinion as a long-time participant in, and student of, the communications industry that a forced divestiture of Western Electric, Bell Telephone Laboratories, and the creation of independent operating companies and an independent Long Lines Department 1) would not be beneficial to AT&T's shareholders or the over 70 million Bell System customers; 2) would not result in any benefits to the Bell operating companies; 3) would not result in the component parts achieving the highly touted "glamour" status; and 4) are not well founded proposals.

TABLE I.—FIVE YEAR EARNINGS PERFORMANCE OF 20 GLAMOUR GROWTH STOCKS¹

[In percent]

	Price/earnings ratio (6/73)	Average return on equity (1968-72)	Average compound growth rate of earnings/share (1967-72)
American Home Products.....	34X	43.5	10.1
American Hospital Supplies.....	32	11.0	12.9
Avon Products.....	48	37.6	13.9
Burroughs.....	38	13.9	17.2
Coca Cola.....	39	26.2	12.5
Disney.....	45	12.4	21.5
Eastman Kodak.....	35	20.2	9.2
IBM.....	31	18.6	13.6
Int'l Flavors and Fragrances.....	73	20.1	13.6
Johnson & Johnson.....	45	17.1	23.0
Kresge.....	34	17.1	23.6
Lilly (Eli).....	39	22.2	16.8
McDonalds.....	44	31.6	36.2
Merck.....	40	25.8	9.5
Minnesota Mining.....	33	19.1	9.7
Polaroid.....	72 *	15.0	(7.0)
Schering Plough.....	40	27.3	18.0
Tampax.....	42	39.0	16.4
Upjohn.....	39	14.6	8.4
Xerox.....	41	24.6	17.7
Average.....	42.2X	22.8	14.8

¹ A selected list of generally recognized "glamour growth" stocks, all with price/earnings ratios in excess of 30 times in mid-1973.

Source: Standard & Poor's, Moody's.

TABLE II.—RETURN ON EQUITY AND PRICE EARNINGS RATIOS OF COMPANIES AGAINST WHICH A DIVESTED WESTERN ELECTRIC MIGHT COMPETE

	Price/earnings ratio Aug. 17, 1973	Return on average common equity 1968-72 (percent)
American Chain & Cable.....	7X	5.4
AMP Inc.....	42	21.6
Beckman Instruments.....	16	6.9
Collins Radio.....	17	(38.0)
Cutler-Hammer.....	8	8.3
Essex International.....	7	16.8
General Cable.....	7	11.6
General Electric.....	19	14.8
General Instrument.....	15	5.1
Gen. Telephone & Electronics.....	10	12.6
Globe-Union.....	7	6.6
Hewlett-Packard.....	47	14.0
Admiral Corp.....	5	.9
Avnet, Inc.....	5	27.3
Corning Glass Works.....	28	13.3
EG&G, Inc.....	21	8.7
Emerson Electric.....	30	24.3
Fairchild Camera & Instrument.....	16	(6.1)
Allegheny-Ludlum Steel (True Temper Corp.).....	6	7.5
Allis-Chalmers.....	10	.5
Aluminum Co. of America.....	13	8.7
Amerace-Esna.....	6	46.3
Akzona Inc.....	9	12.5
American Machine & Foundry.....	8	20.9
Anaconda Co.....	8	5.3
Arvin Industries.....	13	9.9
Bell & Howell.....	9	10.3
Bendix Corp.....	7	12.4
Bulova Watch.....	8	9.2
Burroughs Corp.....	43	13.9
Cerro Corp.....	4	7.3
Cessna Aircraft.....	7	13.5
Copperweld Corp.....	5	10.5
Eagle-Picher.....	8	14.9
Englehard Minerals & Chemicals.....	11	18.1
ESB Inc.....	8	8.5
Ex-Cell-O Corp.....	9	9.1
Foxboro Co.....	27	5.2
General Dynamics.....	6	4.3
Harris-Intertype.....	11	11.9
Honeywell, Inc.....	22	11.7
Kennecott Copper.....	8	11.5
Keystone Consolidated Industry.....	6	3.9
National Cash Register.....	19	2.2
International Telephone & Telegraph.....	7	27.9
Leeds & Northrup.....	19	7.8
Mallory (P.R.).....	9	9.8
Motorola, Inc.....	21	10.8
Radio Corp. of America.....	10	16.0
Sangamo Electric.....	6	5.0
Internat'l Business Machines.....	32	18.6
Sprague Electric.....	9	(6.3)
Square D Co.....	19	21.6
Tektronix, Inc.....	20	11.8
Texas Instruments.....	35	11.6
Triangle Industries.....	7	5.7
Varian Associates.....	13	2.5
General Signal.....	17	13.5
North American Philips.....	6	10.4
Robertshaw Controls.....	7	11.0
Westinghouse Electric.....	15	11.1
Zenith Radio.....	11	17.4
Lear Siegler.....	7	25.6
Ling-Temco-Vought.....	4	17.5
Litton Industries.....	8	12.5
Magnavox Co.....	15	19.4
McGraw-Edison.....	9	11.4
Northrop Corp.....	6	12.3
Ohio Brass.....	10	5.6
Perkin-Elmer.....	39	12.9
Phelps Dodge.....	10	13.5
Raytheon Co.....	8	13.8
Reynolds Metals.....	27	4.3
Sanders Associates.....	12	(11.6)
SCM Corp.....	7	6.1
Singer Co.....	9	14.8
Sperry Rand.....	16	10.4

	Price/earnings ratio Aug. 17, 1973	Return on average common equity 1968-72 (percent)
Stewart-Warner.....	8	12.1
Studebaker-Worthington (Tung-Sol Electric).....	4	14.7
Sunbeam Corp.....	13	10.1
TRW, Inc.....	8	40.8
United Aircraft.....	5	6.4
Victor Comptometer.....	10	10.0
Whittaker Corp.....	9	19.3
Average.....	13.2	11.1

Source: AT&T Co., Compustat.

TABLE III.—BELL SYSTEM AND INDEPENDENT EARNINGS COMPARISONS

	Price/earnings ratio (1972)	E.P.S. growth rate (1967-72) percent	Market/book ratio (1972)	Average return on equity (1968-72) percent
Central Telephone & Utilities.....	12.2X	7.7	1.7X	15.5
Continental Telephone.....	10.7	9.4	1.9	19.2
Florida Telephone.....	19.1	17.4	1.7	9.6
General Telephone & Electronics.....	11.2	4.4	1.4	11.5
Lincoln Telephone.....	9.2	12.5	1.2	21.5
Mid-Continent Telephone.....	13.6	11.6	1.9	16.8
Rochester Telephone.....	15.8	9.9	1.9	11.3
United Telecommunications.....	13.6	4.9	1.8	31.5
Independent Telephone Average.....	13.2X	9.7	1.7X	17.1
Cincinnati Bell.....	10.8X	1.2	1.0X	9.4
Mountain States Telephone.....	9.9	5.7	1.0	9.8
New England Telephone.....	14.1	(2.6)	1.1	8.1
Pacific Northwest Bell.....	11.5	1.9	1.0	8.3
Pacific Telephone.....	12.6	2.4	.9	7.7
Southern New England Telephone.....	15.1	0.8	1.0	8.9
Public Bell subsidiary average.....	12.3X	1.6	1.0X	8.7

Source: Salomon Brothers & Company Reports.

EXHIBIT 2.—*Letter from Mr. La Blanc Transmitting Selected Financial Data on Western Electric*

SALOMON BROTHERS,
New York, N.Y., July 24, 1974.

MR. GERALD HELLERMAN,
Antitrust and Monopoly Subcommittee,
U.S. Senate, Washington, D.C.

DEAR MR. HELLERMAN: I enjoyed seeing you in Washington on July 9th and look forward to your calling me next time you are in New York.

Attached is some selected financial data on Western Electric Company, using figures for the year ending December 31, 1973. The first column shows the actual performance for the company during the year and indicates a return on equity of 10.46%, with pretax interest coverage of 11.41 times. The debt ratio as of year end was just under 24%. The second column shows the effect on the company assuming a 50% debt ratio and a proportional increase in interest expense (this works out to be 6.26% on year end debt—the actual embedded cost of debt at year end was 8.23%). Under these assumptions, the return on equity would have been 14.24% and interest coverage before taxes would have dropped to 5.46 times, all other things being equal.

The last column shows the effect assuming that the additional debt needed to bring the debt capitalization up to 50% had an average cost of 10%. Return on common equity in this case would be 13.25%, and interest coverage would be 4.17 times.

To get to the point of your question, I doubt very seriously whether increasing Western Electric's debt ratio, thereby using added leverage to increase the return on equity, would make Western Electric a "glamour stock" in investors' minds. Of the 20 glamour growth stocks in Table I of my testimony, only two had debt ratios over 20%, one being MacDonald's whose debt consists primarily of mortgages on their hamburger stands. The average debt ratio of all these companies is only a little over 12%. It is also interesting to note that the average debt ratio of all of the companies against which a divested Western Electric might compete, as shown in Table 2, is only a little over 33%.

I therefore continue to feel that the investment community would view a 50% debt ratio as imprudent for Western Electric. I continue to feel that it is doubtful that Western Electric would become a glamour in investors' minds were it divested from AT&T.

If I can be of any further help, please do not hesitate to ask.

Sincerely,

ROBERT E. LA BLANC,
Vice President.

WESTERN ELECTRIC CO.

[In thousands of dollars]

	Year ended Dec. 31, 1973	Assuming	
		50 percent debt at 6.26 percent	50 percent debt (24 percent at 6.26 percent; 26 percent at 10 percent)
Gross income:			
Total sales.....	\$7,037,290	\$7,037,290	\$7,037,290
Other income.....	35,771	35,771	35,771
Total gross income.....	7,073,061	7,073,061	7,073,061
Costs and expenses:			
Costs of products and services.....	5,177,796	5,177,796	5,177,796
Development expenses.....	574,344	574,344	574,344
Merchandising and general expenses.....	642,812	642,812	642,812
Interest expense.....	59,432	124,135	162,750
Total costs and expenses.....	6,454,384	6,519,087	6,557,702
Income before income taxes.....	618,677	553,974	515,359
Total income taxes.....	303,372	271,669	252,732
Net income.....	315,305	282,305	262,627
Capitalization:			
Long-term debt.....	949,000	1,982,176.5	1,982,176.5
Total equity capital.....	3,015,353	1,982,176.5	1,982,176.5
	3,964,353	3,964,353.0	3,964,353.0
Return on equity (percent).....	10.46	14.24	13.25
Interest coverage before tax.....	11.41X	5.46X	4.17X

EXHIBIT 3.—*Prepared Statement of Mr. Hallingby Re Market Reaction to Restructuring of Bell System*

STATEMENT OF PAUL HALLINGBY, JR., ON BEHALF OF AMERICAN TELEPHONE & TELEGRAPH CO.

BACKGROUND

First may I offer a brief summary of my background. I am a native of Los Angeles, California, and have lived and worked in New York since entering the investment banking business in 1946. I graduated from Stanford University in 1941, majoring in engineering, and attended the Graduate School of Business Administration of Harvard University before going on active duty as an officer in Naval Aviation in mid-1942. From 1946 to 1952 I was in the investment banking business in New York. Thereafter I spent

six-years as Financial Vice President of Middle South Utilities, Inc., a large public utility holding company. Beginning February 1, 1958, I was a General Partner of White, Weld & Co., New York for fourteen years. Since incorporation of the firm on February 1, 1972, I have been President and a Director of White, Weld & Co. Incorporated.

My firm is engaged in the field of international investment banking and securities brokerage. We are members of the New York Stock Exchange, the American Stock Exchange, and other principal securities exchanges. In investment banking our company acts as manager or co-manager of a substantial volume of public offerings of bonds, preferred stocks and common stocks of electric, gas and telephone utilities as well as companies in many other industries. We also participate as an underwriter and distributor of securities offerings underwritten by groups managed by other investment banking firms, and we are active in negotiating direct placements of security issues with institutional investors. In point of dollars of securities offerings managed, our firm typically ranks among the top seven or eight in the investment banking industry from year to year.

The valuation of companies and their securities is central to all the investment services which my firm provides. As a major investment banker, our firm is continuously involved in determining the valuation for new public offerings, in advising companies on the desirability and terms of exchange for acquisitions and divestitures as well as on other developments which will impact the market price of their stock. Similarly, in our Research Division, the principal activity is analyzing the effect of anticipated future events on the market value of publicly traded securities. In both our Research and Investment Banking areas we have senior staff members with more than 12 years experience, as well as associate members, specializing in evaluating the operations and securities of telephone and electric utility companies. Thus the topic to which I speak here today is similar in many respects to the assignments which my firm undertakes on a regular basis.

My own responsibilities are in the investment banking, or corporate financing area of the firm, and in overall management. I served for several years as Chairman of the Public Utility Securities Committee of the Investment Bankers Association of America. I was Governor of the American Stock Exchange for several years and am a director of several corporations.

SUMMARY

My understanding is that the Subcommittee has designated the communications industry for study to ascertain whether or not it could be restructured to the benefit of the American public. My testimony shall concern itself solely with the Bell System and, specifically what the stock market's reaction would be to such a restructuring. The Subcommittee has heard from two financial witnesses—Messrs. Vlachos and Whitman—who asserted that the divestiture from American Telephone & Telegraph (AT&T) of Western Electric Company, Bell Telephone Laboratories, Long Lines and the telephone operating companies of the Bell System would benefit shareholders of AT&T. They predicted that such entities, if divested from AT&T, would in aggregate command a higher market valuation than AT&T as one consolidated company and that several divested entities would become glamour stocks. This overt optimism on the part of the two previous witnesses, in my opinion, was based largely on certain arbitrary and superficial conclusions with respect to both stock market reaction and stock price performance. It is my feeling that their conclusions underplayed the uncertainty of judging the future value of marketable equity securities and conveniently ignored the considerably more comprehensive approach to evaluating investments through analysis, particularly security analysis, which present-day investors require. Moreover, they did not appear to give sufficient weight to the financial and operational problems incident to the break-ups they considered. Finally, and very important, neither witness seemed to take adequately into account the consequences which their proposals would impose on customers using the 110 million telephones served by the Bell System.

In sum, I disagree with the opinion of the two previous witnesses and summarize my conclusions briefly as follows:

1. I do not believe that (a) the separate units of AT&T would sell at a higher aggregate market value than AT&T as it is presently constituted, or

that (b) any of the AT&T operating entities would become glamour stocks, i.e. sell at a price earnings ratio of more than two times the average market multiple. Consequently, it is my judgement that investors would not derive any material benefit from a break-up of AT&T and I believe there is a fair probability that in the event of divestiture the sum of the separate parts would be worth less to investors than AT&T as a unified whole.

2. Most importantly, any unlikely but possible modest near term benefits to investors from divestiture would be exceeded by cost increases to the millions of Bell System customers as well as by a possible diminution in the rate of improvement in customer service.

GENERAL DISCUSSION

In my opinion, the proper way to judge the wisdom, or lack of it, with respect to any proposed restructuring of the corporate framework of the Bell System is by the test of whether it would be of benefit to both investors and consumers. Moreover, to be truly meaningful to both investors and consumers any benefits of restructuring must endure beyond the short term and continue over the longer term.

My testimony today shall feature three principal points, viz: (1) evaluating the stock market's reaction to a divestiture of key corporate entities of the Bell System involves a high degree of uncertainty owing to both lack of precedent and to inherent difficulties in anticipating market evaluations; (2) the degree of uncertainty inherent in such evaluation can be reduced considerably through the type of comprehensive analysis which my firm has undertaken here; and (3) any divestiture program must be of benefit to both investors and consumers over the longer term.

In the business of investing in common stocks the art of analysis, particularly security analysis, has become an essential ingredient to investors with even a small degree of sophistication. I refer to security analysis as an art since, despite the progress of the last twenty years, it involves too large an element of uncertainty to qualify as even a quasi-science. Yet, evaluation of investments through security analysis is widely accepted by professional money managers responsible for the investment of countless billions of dollars—it is done daily by several thousand qualified and experienced analysts who influence the evaluation of investments in common stocks. Security Analysis goes deeply into the study of all factors that affect the trend of both sales and earnings as well as the dividend paying capability of the company in question. The pattern of these factors must be considered for not only the past and the present, but also anticipated reasonably for the future. Some of the more important of these factors are set forth in Appendix I.

In approaching the valuation of a possible break-up of the Bell System through divestiture of the major corporate entities by AT&T, my firm made statistical comparisons of these entities with comparable corporations and with AT&T itself and other AT&T subsidiaries, where appropriate. We have attempted to apply basic analytical reasoning to a break-up, its effect on prospective market prices, and collaterally to identify the basic consequences of such a break-up to customers of the Bell System. In so doing, we have attempted to narrow the uncertainties inherent in anticipating market valuation of common stocks of companies that presently are privately held.

Before discussing our assessment of the effects of divesting the various operating units from AT&T, I will briefly summarize my understanding of how they fit into the Bell System organization. As presently structured the parent company, *AT&T*, is the source of broad policy guidance and overall coordination of all the corporate entities. AT&T furnishes technical and other services to the telephone operating companies pursuant to license contracts. *Bell Laboratories* provides the research, development and design work for the Bell System and is 50% owned by *Western Electric* which is the manufacturing and supply unit for the System. *Western Electric* purchases materials and components and produces communications apparatus and equipment, cables and other products used by the associated telephone companies. *Long Lines* plans, develops, engineers and manages the inter-city network and, additionally, concerns itself with advanced technology in developing and expanding the Bell System to provide efficient service at the lowest possible cost to customers. The *24 telephone operating companies* provide the local and intra-

state telecommunications services to customers and jointly with Long Lines interstate telecommunications services. At the top of the pyramid, AT&T, in effect, commits to support the financing of all the entities in the Bell System.

WESTERN ELECTRIC

An item of principal consequence in a vertical break-up of the Bell System is the valuation the stock market would assign to the equity of Western Electric, a company with 1973 sales over \$7 billion, 97% of which were made to AT&T or directly to the U.S. Government. The two previous financial witnesses predicted that earnings of Western Electric would be priced in the marketplace at a much higher multiple relative to the market than now is accorded to AT&T.¹ I do not share these views. While the novelty of public ownership for a company of Western Electric's size (ranked 10th in Fortune 500), financial strength, and market standing would certainly generate considerable investor interest at the time of the offering and could lead to a temporary P/E premium, I believe such a premium would be modest at best once the enthusiasm for the distribution passed. My reasons include the following:

(1) *WE's record of earnings growth has been below the industrial average.*—As mentioned in Appendix I, the most important consideration in valuing a stock is earnings growth. While Western Electric's earnings growth over the past five years appears above average at first glance, after making necessary adjustment for substantial amounts of new equity from AT&T (see note below)² its compound earnings per share growth was slightly less than 6%, or about in line with the 6% compound growth registered by AT&T itself. This growth rate was below the 10% compound rate of total corporate profit growth and the 9% compound rate of the Standard & Poors (S&P) 425 company average during the same period. (The S&P is a broad based and widely accepted index of stock market activity and corporate operating performance).

(2) *WE's return on equity is not high enough to support above average internal growth in future.*—An important determinant of a company's internal growth potential is its return on average equity, or more specifically its annual retained earnings (after deducting dividends) as a percent of average equity.³ Western Electric's return on equity before dividend distributions averaged 10.8% for the past 5 years (10.0% in 1973), which was moderately ahead of AT&T's 5 year average of 9.2%, slightly below the S&P average of 11.3%, and well below the 20% average for leading glamour stocks.

Since Western Electric distributes roughly one half of its earnings, then its retained earnings as a percent of average equity (or said another way, its new equity capital available for future growth) is about 5.5%. Because Western Electric's primary customers, the Bell System, are regulated as to allowable return on equity and would resist attempts by major suppliers to increase their profit margin at the Bell System's expenses, it is doubtful that Western Electric would be able to significantly increase its pre-dividend return on equity (i.e. above 15% or 7.5% after dividends). This could only be achieved by raising product prices substantially which would be to the detriment of telephone customers. Consequently, I do not believe that Western Electric's growth potential is significantly better than the 6% rate it has exhibited in the past, which is well below the typical glamour growth company.

(3) *WE's dependence on outside financing to meet capital requirements is a negative consideration.*—Western Electric's capital requirements exceeded its own internally generated funds by a considerable margin during the past 5 years and AT&T provided additional equity of \$575,000,000 to meet those needs. Because Western Electric's retained earnings generate less than 40% of its capital requirements, even a higher possible future return on

¹ Stocks typically are valued on a "times-annual-earnings per share" basis which is most commonly referred to as the price/earnings ratio (P/E); AT&T is selling on the New York Stock Exchange at ten times earnings per share reported for the most recent twelve months.

² This adjustment makes allowance for the \$575 million infusion of new equity capital made by AT&T into Western Electric for which no additional shares of stock were issued or interest charged to earnings. The terms of this equity financing, it was assumed, were similar to those which would have applied to AT&T itself.

³ A company's internal growth rate longer term will approximate the sum of (a) its retained earnings as a percent of equity, (b) plus or minus the average change in its retained earnings return on equity.

equity would not significantly lessen Western Electric's need for outside financing in the future. Typically, companies which are dependent on large amounts of outside capital to finance growth objectives of less than 10% do not sell at premium P/E ratios because of the risk that unfavorable stock market conditions could affect its per share earnings results and because the additional shares issued absorb buying interests in the stock which otherwise would bid up the P/E ratio for existing shares.

(4) *Based on key performance variables, WE is most comparable to market averages and not to the glamour stock group.*—Western Electric's growth rate, return on equity, and financial self sufficiency do not compare favorably with the typical glamour growth company. As shown in Appendix II the average company in White, Weld's Index of 50 growth companies reported earnings gains of 2.5 times the rates of Western Electric for the past 5 years, they earned twice as much on their equity, and retained nearly three times the percent of earnings to finance growth as Western Electric. Western Electric's results and prospects are more in line with the market averages, which currently sell at 9.8 times earnings, than they are with glamour growth companies. My firm projects that glamour stocks earnings growth and retained earnings will continue to outpace Western Electric by at least a 2 to 1 margin. Consequently, I do not believe that the stock of divested Western Electric would deserve or be accorded a premium price earnings ratio.

(5) *Yield considerations argue against WE being accorded a premium P/E ratio over AT&T and the market averages.*—If Western Electric were separated from AT&T, investors naturally would continually compare the two stocks to determine which one was the more attractive on a combined return basis (i.e. dividend yield plus stock appreciation). Currently, AT&T's yield of 6.4% is almost as high as its projected longer term growth rate and hence yield is an important investment consideration in evaluating the combined return from the stock.⁴ Since AT&T has a higher payout ratio than Western Electric (62% vs. 53%) then the two stocks could have the same yield only if Western Electric sold at a lower P/E ratio. Conversely an increase in the P/E ratio of Western Electric over AT&T would further widen the yield gap. I would not expect Western Electric's stock to sell at a significantly lower yield than AT&T and consequently believe that comparative yield considerations would argue against Western Electric's stock selling for a premium P/E ratio over AT&T.

(6) *WE's supplier relationship and reliance on one industry reduces market appeal.*—Another important investment consideration is the fact Western primarily performs a supplier function and sells its products primarily to one market—the telephone companies. Our investigation indicates glamour growth companies in almost all cases produce final goods and services rather than provide a supplier function and sell to a large number of buyers. For example, there are no glamour growth companies we are aware of whose principal customer is the automobile industry even though autos are the largest single non-food industry in the country. Similarly, in the White, Weld Growth Stock Index of 50 companies which was compiled before my involvement in this testimony, all but one company is a producer of final goods or services and every company sells to a large number of customers. Since Western Electric essentially is a supplier to one market, I believe that Western Electric if divested would not be accorded a premium price earnings ratio. On the other hand, if at that time for some reason Western could exert pressure on the telephone companies, then AT&T and its subscribers and stockholders would suffer.

My firm's analysis indicates that a significant degree of improvement in price earnings ratio would not persist for Western Electric unless it were successful in making basic changes in its modus operandi aimed at improved profitability and a predictably stronger growth trend thereof. As suggested by previous witnesses, Messrs. Vlachos and Whitman, this might possibly be brought about by taking steps which would remove Western Electric from indirect regulation as to profitability by the state and federal commissions and by broadening its product lines and markets served both at home and abroad. While diversification has conceptual appeal, it would be difficult to achieve in a meaningful way for three basic reasons, viz:

⁴ A stock's yield may be calculated either by (1) dividing the current dividend by the current price or (2) dividing the current payout ratio by the current price earnings ratio. Both produce the same result.

1. Western Electric does not generate sufficient capital internally to satisfy the growth requirements of its existing operations and the cost of external capital for major new endeavors would significantly diminish their attraction.

2. Western Electric is a large company in its own right (ranked 10th largest in the U.S. and 3rd largest outside of the U.S. according to Fortune Magazine). Excluding the major automobile and oil producers (two markets Western Electric is not likely to enter) it is one of the four largest U.S. industrial corporations. Consequently, the opportunities for expansion by Western Electric into markets which would have a meaningful impact on earnings and where it has applicable expertise appear quite limited.

3. Because of Western Electric's size and position, diversification raises obvious antitrust questions. This concern would diminish the possible but limited attraction of diversification to investors.

While Western Electric's sales and profits are large compared to other U.S. and foreign corporations, they are still a relatively small part of the total Bell System. Based on reported 1973 results, Western Electric's income was 10.5% of AT&T's total income of \$3.0 billion. If Western Electric and Bell Labs were separated from AT&T, it is reasonable to assume that the price earnings ratio of AT&T, the parent, would not increase and most likely decrease relative to other market multiples. Since Western Electric is only one-tenth of total earnings, even a temporary P/E premium for Western Electric would probably not be sufficient to offset the likely contraction in market value for AT&T's other operations. Consequently, I do not believe that existing AT&T shareholders would benefit from a divestiture of Western Electric.

It also seems likely that steps taken by Western Electric to improve profitability—both through price increases and expansion—would reasonably be expected to be harmful to customers of the Bell System. Removal of regulation as to profitability and operating in a way that would maximize profits surely would mean higher prices for Western Electric products; such higher prices, as they relate to equipment for the Bell System, ultimately would have to be borne by the Systems' customers. Moreover, expansion of operations in pursuit of investor favor and a higher P/E ratio is fraught with peril. Diversion of significant resources by Penn Central, RCA, Westinghouse, and so many other large companies toward more fashionable endeavors and new markets unquestionably impaired the technological progress, the level of commitment, and quality of service in their basic business to existing customers.

BELL LABS

Another important ingredient of a vertical break-up of the Bell System would be divestment of the stock of Bell Telephone Laboratories, the research company. Witnesses preceding me here have laid claim that this entity, like Western Electric Company, would turn out to be a relatively high price/earnings ratio stock, fitting into the so-called glamour group of high-flying equities.

I strongly disagree with the logic behind their conclusion:

First, any assessment of the potential market valuation of Bell Labs is complicated by the fact that it has always been operated as a non-profit entity and as such has no earnings. Bell Labs obviously would not be attractive to investors unless it earned a profit; but to do so the cost of its operations would have to be increased to include a profit element and this added cost would have to be borne by the ultimate consumer—primarily the telephone ratepayer. I seriously question whether this is likely to occur or whether it would be in the public's interest if it did.

Second, almost by definition an unavoidable problem of R&D operations is that they are working on new projects and processes whose costs cannot be accurately predetermined. This condition makes profit forecasts all the more difficult and we believe would prevent investors from developing sufficient confidence in Bell Labs profit growth to accord it a high price/earnings ratio. Moreover, low or questionable profit forecasts could impair its ability to raise increased capital at acceptable rates for growth.

Third, I am not aware of any sizable company (sales over \$100 million) whose primary activity is research and development which is currently or has consistently been a member of the so-called glamour stock group. I believe the lack of such representation is not accidental but rather points up the impracticality of separating research and development from manufacturing and marketing, and also the reluctance of substantial companies from funding re-

search and technological work which subsequently could be utilized by and benefit competitors using the same research firm.

For illustrative purposes, though, if one were to assume that Bell Labs could earn 5% after taxes on its gross billings of roughly \$500 million, then its net income would amount to only \$25 million or less than 1% of AT&T's 1973 total. In other words, the divestiture of Bell Labs would not produce any bonanza to AT&T stockholders—its just too small and too dependent—but shareholders could suffer a contraction in AT&T's market value resulting from the divestiture of its research arm.

I believe that Bell Labs could appeal to performance investors only if it significantly altered its objectives from the single purpose of improving the quality and efficiency of telecommunications to one where the profit motive became paramount and the welfare of the telecommunications customer was relegated to the position of providing a means to that end. Then the Bell System customers would be called upon to bear the higher cost of profit-oriented research, and possibly a slower rate of technological development owing to the distraction of other activities undertaken by an independent Bell Telephone Laboratories. This would undoubtedly have an adverse impact on the valuation of AT&T's stock.

LONG LINES

Another major component that would wind up in public hands as a part of a vertical break-up of the Bell System is Long Lines. This totally unique division provides leadership in the Bell System with respect to planning, designing, engineering, constructing and operating the inter-city telecommunications network. It is difficult for me to find the logic of considering seriously a divestiture of this essential ingredient to providing the highest quality service to Bell System users at the lowest reasonable cost. While I share in the thought expressed by others here that the stock of Long Lines would make an interesting holding to the long-term investor, I seriously question the logic of disintegrating the nationwide network which is provided jointly by Long Lines, the Bell operating companies, and the Independent Telephone Companies, and which has resulted in the world's finest telecommunications system for such a singularly speculative possibility. One of the major achievements of Long Lines to date has been to construct and operate a nationwide interactive network which, with an optimal number of facilities, allows each of the Bell Telephone companies to interconnect with one another and with all of the independent telephone companies as well as with telecommunications systems elsewhere in the world. While the investment in the required facilities presently stands at around \$17 billion, there has been a continuing declining unit cost which has resulted in stabilized rates despite substantial inflation. The problems associated with having Long Lines attempting to provide the same quality of service on an independent, nonpartner basis can only result in diseconomies of scale, wasteful duplication of facilities, plant equipment and higher charges to the users.

Electric utilities, over the years, have been working continually toward more effective nationwide interconnection of their grids for purposes of both emergency interchanges of power and energy and economy. It has been my direct experience that common ownership is the best vehicle that permits obtaining the most complete benefits for both investors and consumers through planning, engineering, and building the properties as one system. While the benefits of interconnection can be obtained among cooperative utilities under separate ownership, deriving full advantages for the good of both investors and consumers requires integration to which common ownership lends itself so naturally. If Long Lines were to be separated from the operating companies of AT&T, they would have to obtain the overall centralized planning and engineering now performed by Long Lines from the independent Long Lines—at a higher cost—or some other source since no one company has the resources or knowledge to perform this essential function. In either event, this centralized planning and engineering function would become more costly and less efficient than if performed by Long Lines as part of the integrated system. This would not benefit either AT&T's shareholders or customers. Accordingly, it is hard for me to make sense of a proposal to break-up the Bell System's successful integrated network. Moreover, since Long Lines would continue to be a regulated utility, even if divested, it is difficult to see on what basis glamour stocks status can be predicted.

TELEPHONE OPERATING COMPANIES

The two financial witnesses proposed that the 24 regional telephone operating companies likewise be candidates for divestiture. My study of these leads me to the general conclusion that they would evoke price/earnings ratios in the stock market typically in line with or a little less than that accorded AT&T. Six of these companies have minority shares owned by the investing public. Experience in this area has demonstrated that these affiliates have consistently sold at price/earnings ratios comparable to AT&T. During the past 5 years the high and low P/E ratio for each affiliate telephone company has averaged within a two point range of AT&T's P/E ratio (see Appendix III). The stocks of smaller independent telephone companies typically sell at a higher price/earnings ratio than does AT&T (11-12 vs. 9-10) because such companies typically have a smaller earnings base, do not operate in more stagnant urban markets, and are thought by investors to offer faster rates of earnings growth. Also, most of them are regarded as acquisition candidates for the larger independent systems, and acquisitions usually mean market premiums. The smaller independent telephone companies also generally have lower payout ratios than the Bell System affiliates. The higher percentage of retained earnings facilitates more rapid growth by these independents but results in a lower current yield to shareholders.

In reviewing the operating characteristics of the publicly held Bell regional telephone companies, I can not agree with the opinion that the 24 operating companies as separate entities would in aggregate command a higher market valuation than they now do as part of AT&T. However, some operating units will sell at higher price/earnings ratios than others, depending on their prospects. We estimate that 8-10 could command price earnings ratios higher than that of AT&T, but that the majority would sell at equal or lower multiples. The major electric utilities, all of which, of course, operate in definitive geographical regions, have typically showed an average price/earnings ratio approximately equivalent to that of AT&T at the time.

While it is hard to find advantages to investors through divestment of the Bell System companies, such a move would make the consumers of these companies vulnerable to several basic disadvantages.

First, if the proposed divestitures occurred, AT&T no longer would have an economic function to perform and the telephone operating companies would have to individually provide the many services now provided for economically on a centralized basis. I refer to such activities as research, development, procurement, warehousing, financing, accounting, budgeting, engineering, construction and operating policies and programs.

A second disadvantage relates to cost of capital raised through financing by the telephone operating companies, most of which is done through public sales of long-term debentures. In most cases these securities are rated AAA, which is the highest possible credit rating by the two major rating services, Moody's and Standard & Poor's. It is well known in the financial community that the quality of the investment in the operating companies is enhanced by the presence of the AT&T umbrella, so to speak, over the Bell System Companies with respect to financial strength and continuity. The ability of AT&T to coordinate the timing of debt issues is also helpful in raising funds in an orderly fashion. At present even though an operating company from time to time may experience temporarily poor earnings, it receives funds from AT&T if there is reasonable expectation that earnings will be restored to adequate levels. However, were the operating companies to be cast adrift and left to finance solely on their own, poor earning firms would be unable to raise equity capital and, consequently, their debt ratios and interest coverage would no longer support a top quality credit rating. Under these circumstances, it is reasonable to expect the existing ratings of the poor earning companies would be moved down. This would increase their cost of capital, an essential component to product pricing by the telephone operating companies; higher capital costs, of course, mean higher rates for telephone service to customers.

A final disadvantage to separation of the Bell System companies is the loss of centralized research (Bell Telephone Laboratories) and product development (Western Electric) which to date has worked so well for AT&T's customers in point of both cost and technological advancement. As a graduate of the electric utility industry, I am especially interested in recent happenings

there with respect to moving away from total dependence upon various independent manufacturers for research and product development. In 1971 the electric power industry adopted plans to form and finance Electric Power Research Institute to fill a void that has existed because research and development has never been a part of electric utility operations. In other words, electric utilities are moving toward integration of research and development within themselves. The newly-formed arm will have a mission of centralized research along the line of that which Bell Labs has provided so successfully to the Bell System in particular and the telecommunications industry in general.

CONCLUSION

It is my strong conclusion that the effects of a vertical break-up of the Bell System would clearly not be beneficial to consumers or investors on balance. I do not believe that the divestiture of the operating entities of AT&T would result in a material advantage to AT&T's shareholders and feel the possibility even exists that the sum of the market values of the separated parts could be less than the existing whole. Steps taken to improve the longer term investment posture of these entities could only come through removing existing restraints as to profits, prices, products, market served, etc. of both Western Electric and Bell Telephone Labs. If these restraints were done away with, however, the result no doubt would be higher profits derived from higher prices which, in turn, would have to be borne in large part by Bell System customers. These same customers likewise would need to bear the brunt of higher costs of telephone service necessitated by removal of centralized AT&T management services and by the loss of the economic advantages of the major coordination function of Long Lines. Additionally, higher rates to Bell System customers would emanate from an expected rise in costs of capital to the telephone operating companies financing without benefit of the AT&T umbrella. Finally, research and development expenses of these companies would be expected to up as their benefits from present intra-family relationships with Bell Telephone Labs and Western Electric were phased out and restructured over the longer terms.

In short, an unlikely but modest short run gain for investors would be offset and exceeded by cost increases to the million Bell System customers for telephone service and possible diminution in the quality of such service. Gentlemen, I thank you.

Appendix I

CRITERIA FOR COMMON STOCK EVALUATION

The most important variables affecting the P/E ratio of a common stock relate to its future earnings prospects—specifically:

1. The anticipated future rate of earnings growth (growth in markets served, ability to penetrate existing market and open new markets).

2. The quality of earnings (conservatism of accounting, operating versus non-operating income, balance sheet or price changes versus unit volume growth, domestic versus foreign source income, cash sales versus long term receivables, etc.).

3. Consistency of earnings (sensitivity of operations to economic cycles and interest rate shifts).

4. Controllability of earnings (company's ability to cope with internal and external pressures such as competition, regulation, inflation in maintaining growth objectives).

5. Predictability of earnings (confidence of investors in assessing future earnings levels).

Other important but secondary factors affecting a stock's valuation include:

a. Its financial strength and dividend paying capability.

b. The ability, quality, continuity and motivation of management.

c. The understandability and social acceptability of the company to investors.

A company can be ranked highly in the latter three categories (a, b, c) but due to lackluster earnings prospects still be accorded a low P/E ratio. Many stocks in the Dow Jones Industrial Average are examples of blue chip companies with superior management and financial resources but which do not carry premium price/earnings ratios (General Motors, Exxon, Ford).

APPENDIX II.—COMPARATIVE STATISTICS, APRIL 1974

[In percent]

	Western Electric	A.T. & T.	S. & P. 425	All companies	50 glamour stocks
5-year compound earnings growth (1968-73).....	6.0	6.0	9	10	16.0
5-year average return on equity (1968- 73).....	10.8	9.2	11.3	11.5	19.7
Latest 12 months P/E ratio.....	NA	10.2	11.4	9.1	27.5
Current payout ratio.....	53	62	39.7	40.2	41.2
Current yield.....	NA	6.0	3.7	4.1	1.5

COMPARATIVE PRICE/EARNINGS RATIOS AND YIELDS OF AT&T VERSUS ITS TELEPHONE AFFILIATES

Year	A.T. & T.	Cincinnati Bell	Mountain States	New England	Pacific Northwest	Pacific Telephone	Southern New England
High P/E ratio:							
1973.....	11.0	-1.9	-1.5	+3.9	+0.6	+0.8	+0.3
1972.....	12.3	-0.5	-1.5	+3.8	0.0	-1.9	-0.7
1971.....	13.7	-1.6	-2.0	+1.6	+0.1	+0.9	+0.5
1970.....	13.5	-1.5	-1.9	0.0	-0.8	+0.5	-2.6
1969.....	14.5	+0.7	-1.7	+1.9	+0.5	+1.2	+0.1
1968.....	15.6	-2.0	-0.4	+0.2	+1.1	+3.9	+1.4
Low P/E ratio:							
1973.....	9.6	-1.9	-1.1	+1.6	+0.8	+0.5	-1.0
1972.....	9.5	+0.2	-0.5	+2.6	+1.2	-1.5	+0.4
1971.....	10.4	+1.0	-0.7	+2.3	+0.6	+0.3	+0.4
1970.....	10.1	-1.3	-0.4	+1.2	+0.4	+1.3	-1.3
1969.....	12.0	-1.9	-1.3	-0.2	-0.5	-0.1	-1.9
1968.....	12.8	-1.5	-0.2	+1.3	+1.8	+4.2	+1.5
Comparative yields:							
High yields:							
1973.....		+1.3	+0.8	+1.5	+1.8	+1.1	+1.5
1972.....		+0.2	+0.5	+1.1	+0.6	+1.0	+1.0
1971.....		+0.6	+0.9	+1.6	+1.6	+1.6	+1.9
1970.....		+0.8	+0.5	+1.5	+1.2	+0.8	+1.7
1969.....		+1.9	+1.0	+2.6	+1.9	+1.7	+2.5
1968.....		+0.7	+0.8	+0.9	+0.9	+0.3	+1.1
Low yields:							
1973.....		+0.8	+0.9	+0.3	+1.3	+0.8	+0.7
1972.....		+0.4	+0.7	+0.7	+1.2	+1.1	+0.9
1971.....		+0.1	+0.7	+1.3	+1.0	+0.6	+0.9
1970.....		+0.5	+1.0	+1.8	+1.5	+1.1	+1.7
1969.....		+0.5	+0.9	+1.4	+1.2	+0.9	+1.2
1968.....		+0.6	+0.9	+1.2	+1.0	+0.5	+1.0

EXHIBIT 4.— Letter From Mr. Whitman Transmitting His Comments Concerning Exhibits 2 and 3 Supra

M. J. WHITMAN & Co., INC.,
New York, N.Y., July 30, 1974.

MR. GERALD HELLERMAN,
Antitrust and Monopoly Subcommittee,
Washington, D.C.

DEAR GERRY: You asked me to comment on the Robert LaBlanc letter to you of July 24th and the Paul Hallingby submission of July 19th.

The basic point in bringing up debt ratios was to show that in Mr. LeBlanc's original submission of returns on equity, his figures were pretty meaningless unless you took account of the finance factor. I guess he now agrees based on his July 24th letter which contains forty per cent (40%) swings in return on equity based on the assumptions used about how a company finances.

In arriving at how much debt a company can carry, stock: debt ratio is only one measure. Graham & Dodd use seven measures and in my forthcoming book I use eight. You should note that, according to Mr. LeBlanc, if WE had fifty per cent (50%) debt ratio, at various interest costs, earnings coverage

would still be 4.17 times to 5.46 times before taxes. Over-all, I'd bet WE bonds would still be stronger than most of his comparables. I haven't checked the arithmetic. The investment community would hardly be likely to view a fifty per cent (50%) WE debt ratio as imprudent.

Also, Mr. LeBlanc's analysis gives no room for other than two-tier financing. For example, WE could do things in part with convertibles which would change ratios. That's the kind of thinking he would engage in if Salomon were WE's investment banker and WE were investor-owned.

On page 7 of Mr. Hallingby's report, his six per cent (6%) growth rate for WE is nonsensical. What the pro forma growth rate would be when done on a per share basis (which is what he does), rather than a total company basis, depends on the terms under which a company finances. Thus, if WE sold stock publicly at forty times earnings for new financing, growth rate might be thirty per cent (30%) compounded or twenty per cent (20%) or some such figure rather than ten per cent (10%) or Mr. Hallingby's six per cent (6%).

Insofar as growth stocks are concerned, the one key element Mr. Hallingby misses is the ability to create new technological innovations. Who could deny that WE is a, if not the, leader? The argument that WE is only a two customer company is facetious on its face. If anything, it is a strong argument for having Telephone divest WE for the benefit of the shareholders. WE is a two customer company only because that is required by the 1956 Consent Decree. Were WE not part of Bell, it could be a multi-customered company and truly benefit both itself and its stockholders from its ability to innovate technologically.

Mr. Hallingby is absolutely wrong in postulating that there is anything unique about WE needing outside financing. I'll bet it's true for at least eighty per cent (80%) of the companies in his 50 company sample, including IBM if it is in the list. Darn few expanding businesses in the U.S. are anything but cash consuming. The economy as a whole, except in a depression, is cash consuming.

A detailed critique, if you want one, will have to wait until I return in September.

Regards.

Sincerely yours,

MARTIN J. WHITMAN.

Senator HART. The committee will resume. With apologies not only for delaying, but for having us knocked out of the box a couple of weeks ago when the full committee scheduled a meeting, we welcome Mr. Robert Nathan.

STATEMENT OF ROBERT R. NATHAN, ROBERT R. NATHAN ASSOCIATES, INC., WASHINGTON, D.C.

Mr. NATHAN. Thank you very much, Mr. Chairman. What I would like to do is submit my full statement for inclusion in the record and then merely to summarize what I feel are the highlights of its particular contents.

Senator HART. It will be printed in full in the record.

[The prepared statement of Mr. Nathan appears as exhibit 1 at the end of his oral testimony.]

Mr. NATHAN. Mr. Chairman, I would like to take one moment to indicate that this testimony in some degree derives not merely from studying some of the testimony that has been presented and some of the data prepared for submission before this committee, but also from my own personal experience over a considerable number of years of serving in some expert witness capacity for the telephone company, the Bell System. I did testify some years ago, Mr. Chairman, before the FCC concerning one of the early rate of return

cases after the inflation began to take its toll in the public utility area.

Also I had the opportunity to testify for A. T. & T. before a congressional committee on the matter of accelerated depreciation and the whole problem of flow through. Further, I testified on behalf of A. T. & T. before the price commission in the early days when the inflation was being attacked in a direct manner.

Then in addition thereto, I have testified in a considerable number of jurisdictions, with respect to rate of return. All this has given me an opportunity to study and achieve some degree of familiarity with economic issues of this particular company and of the industry.

That is part of the basis of my observations.

First, I would like to draw, as an economist, a rather marked distinction between the regulated and nonregulated sectors. I state in my written testimony that I very strongly favor competition. I believe in the enterprise system. I believe in reliance to the extent we possibly can on the marketplace function.

I think we should have no illusions, however, that the marketplace is something less than perfect in our society and has been something less than perfect for a rather considerable period of time.

Nonetheless, I do believe that in terms of reconciling full employment and price stability and stimulating innovation and bringing about quality performance and adequate supplies in relationship to demand, and all of the other positive elements to which we attribute the functioning of the free enterprise system—and I believe these are terribly useful—we ought also to recognize that within our society, for a long time, we have recognized that public utilities do play a distinct function and are subject to different rules and regulations.

In a sense, where there are utilities, and where there are monopolies, and where prices and profits and activities must be controlled, we do provide for regulations in order to, I think, try to stimulate the competitive system and get the maximum benefits of the competitive system, and at the same time to prevent and avoid any abuses that could derive out of a monopoly function, the monopolistic conditions, or monopoly control.

Here we do have a problem in this particular instance with respect to natural monopolies. I believe most economists—I don't know of anybody who would take exception—practically all economists would agree that the basic telephone system is a natural monopoly.

It is certainly a natural monopoly in the very real sense that if we try to duplicate the telephone facilities in this country we would be involved in a rise in costs and prices of tremendous magnitude. There are very grave doubts we could have the services we now have.

I happen to have gone to school long enough ago in Philadelphia, at the University of Pennsylvania, to have been in that city when there were two telephone companies. The Bell System and the Keystone System.

Senator HART. Yes.

Mr. NATHAN. That was not, I am sure, a very desirable set up. Many people had problems. As of today, when one wants to use the

telephone one wants to get everybody. I don't know whether you remember that also?

Senator HART. Yes; and I thought you must be a lot older than I am.

[Laughter.]

Senator HART. I didn't remember the second system until you spoke of it.

Mr. NATHAN. Yes.

Senator HART. We lived out in the suburbs. The only difference I saw when we went into the system was two telephone booths: one Bell and one Keystone. We were on the Keystone.

Mr. NATHAN. Well, this was an interesting period. I think as of now we all pretty much agree that in terms of the basic communications services provided by the telephone, that it is a natural monopoly, and the thing that I would emphasize before looking at the performance of the industry is that in essence what we have today is the telephone industry, which is a system.

It is a unified, integrated system of natural monopolies. Therefore it is subject, properly, to regulation, which regulations concern themselves with the whole problem of how you maximize that service, how you insure adequacy of performance, how one assures quality, how one establishes a structure of rates which, I would say, on the basis of my own observations, as not just subject to economic considerations, but also social and even to some extent political considerations.

It is a system wherein there are very careful surveillances of standards, of performance, of equipment, of maintenance, and where in a very real sense I believe we have achieved, through this regulatory process with the initiative of the company, what I keep hearing over and over again and what I certainly as a seasoned traveler, and especially in the less-developed companies of the world, can attest to is by far the best communications system that prevails anywhere.

I had an opportunity to work in countries like Burma, Afghanistan, Nepal, places like that. Even in the more advanced countries of Western Europe. I come home and recognized quickly what we have here and what sometimes we take for granted, is an extremely effective, efficient, and moderate price system.

We also have—as I can testify very directly and I think strongly—a very modest rate of return in relation to the equity capital used, and I believe that this, too, is attributable to regulation. In my own judgment the rate of return is inadequate really to provide a continuity of the kinds of performance we have been able to enjoy in the past.

The real question, Mr. Chairman, I guess what we face in this kind of hearing is whether there really is a need for more regulation. That is one of the main questions. Would that provide improved performance?

The second aspect is, how does one look upon competition and regulations; and where are the interfaces in this particular industry that would possibly improve performance and reduce costs?

Here, I think, we must recognize very carefully that we are dealing not with A.T. & T. as a corporation alone; we are dealing with a

system, a telephone system not only involving A.T. & T., but also 1,800 independent companies interconnected and integrated in many, many ways.

I recognize, and just mention this briefly, that it is a horizontal integration in terms of one network for the entire country, for all of the users, and total compatibility in a meaningful sense in terms of planning, investment, structure, procedures, pricing, and planning.

We have a horizontally integrated communications system through the Nation—this network or this system.

It is also vertical: and I must say as an economist that I have been tremendously impressed with the functioning of the Bell Laboratories. Sometimes I wonder how in this competitive system of ours we get a degree of emphasis and a degree of quality in the Bell Laboratories operation that I think one can accurately say is hardly paralleled in any other company, let alone any other industry.

We are dealing with a quality of research, and a scope of research, and a time perspective of research that one might expect in listing all the virtues of the vigorous competitive sectors of the economy, and which one does not find elsewhere, in my judgment.

I think the nature of the research undertaken by Bell Labs is remarkably excellent in its quality, its scope, and its results.

It is, of course, vertically integrated with a production component—Western Electric—where you combine research and development along with demand and with engineering and production and procurement. Then, of course, you have the Bell installations and maintenance and operation.

What you have is a very impressive vertical as well as horizontal integration. Finally, I think we have time integration where you have time perspective in planning long periods ahead.

I believe that one can say without qualification that the Bell System—the A.T. & T.—has over the years, been remarkably possessed of vision in respect to anticipating and adjusting and adapting to changing requirements of our society.

Also, of course, this is the kind of an integrated system in the sense of regulation, too, because you have the Federal Communications Commission at the Federal level. You have the regulatory agencies throughout the United States; and in some degree, while they don't always get together, or don't always reconcile their differences, there is a commonality of approach; and some considerable amount of cooperative participation.

I run over these features mainly to say that we are dealing here with a meaningfully integrated system that has been tremendously successful and has had remarkable responses to opportunities and needs.

This leads me in the paper—and I am going to summarize this briefly—to a series of tables and a series of observations as to just how this industry has performed over the years.

Without going through the text, I think one can see this in the tables, starting with table 1 which shows the astounding rate of growth that the Bell System has achieved in the approximately 35 years since the immediate prewar period.

[For the table referred to, see exhibit 1.]

Mr. NATHAN. I don't think there are many people in this country who realize that the Bell telephones in service have gone from literally 18 million only 34 years ago to 114 million last year, which is a rate of growth that exceeds that of most sectors of the economy and certainly, I would say, practically every sector except those of the very, very new products or processes.

We find in this table 1 a whole variety of communications services, including what has happened to households. It is a little shocking to me to recall that in 1940 only 37 percent of the U.S. households had telephone service; today, for all intents and purposes, it is almost a universal service, except in the extremely remote areas.

It is interesting to see how prices in the economy have more than tripled since 1940, whereas the interstate long distance tolls in that period have gone down. They have gone up a little bit recently, but over the whole period they went way down.

Local calls have had an increase to 1973 of 88 percent, as compared with 216 percent in all consumer prices; namely, only about 40 percent as much of an increase as happened in the total Consumer Price Index.

You know, when one looks at these provisions, or standards, or measurements of performance I think one would find it rather difficult to come to any other conclusion than what has happened here is a performance that is about the best one could expect from the truly vigorous competitive system.

I show in table 2 a whole other variety of series of percentage changes in telephone service in different periods since pre-World War II.

[Table 2 appears in exhibit 1 following Mr. Nathan's oral testimony.]

Mr. NATHAN. There we show three periods: The whole period from 1940 to 1973; one period from 1940 to 1953; another, 1953 to 1967; and the recent years. This break in 1967 has its usefulness because that is really when inflation begin to get rather serious.

Mr. Chairman, I was just referring to some of these tables to indicate what has happened in the performance of this industry. I had gone over table 1 which showed the remarkable and phenomenal growth of this industry, where plant value had gone up seventeen-fold, and the telephones in use sixfold, and the percentage of households with telephones going up from less than 40 percent to over 90 percent.

Now, I was referring to table 2 which again shows some of the rather remarkable changes that have occurred in this period, 1940-1973, with breakdowns for the interim periods.

We see, for instance, such an item there as the fact that the prices for the telephone services have increased relatively insignificantly when compared with the whole price level, Consumer Price Index; and how over that period the interstate toll service has gone down tremendously.

As I said, Mr. Chairman, that manifests the kind of expectations of economic behavior at its very best one would attribute to vigorous and dynamic competitive conditions.

Rising productivity is shown on table 3.

[See exhibit 1 at the end of Mr. Nathan's oral testimony.]

Mr. NATHAN. Here we see again a remarkable rate of change for a sector that is not a brand new industry. The telephone industry was not nearly at its present magnitude and size and had not yet permeated the economy in 1940 to the degree it has at the present time, but certainly it was not an infant industry. Yet, we see output per man-hour more than doubling, we see total output increasing in major measure; we see employment practically tripling; we see telephones per employees going way down.

Again, there are manifestations of progress that one would expect only of a very innovative, imaginative, and vigorous managerial capability subjected to hard competition.

In table 4 there are some measures of comparative industry performance. We have just selected a few industries. This is not a sample, but some of the larger industries.

[Table 4 appears in exhibit 1 at the end of Mr. Nathan's testimony.]

Mr. NATHAN. Here I will merely summarize by saying that when we compare the rate of increase in output, the telephone industry is a rapidly growing industry. Of course, radio, TV, air transport were very, very new in 1940. You do not get as much of a rate of growth in the telephone industry as in these new ones.

Compared with most industries, the combination of prices—of productivity, of man-hours, of output, of output per man-hours, of employment growth—all reveal very impressive records.

At the same time the rate of return on equity, I think, does indicate rather impressively that these remarkable growth and efficient performances were not associated with a phenomenal rate of return and very high profits as one might have expected out of such growth and improvement in activity, but were associated with a very modest rate of return on equity capital.

Table 5 merely shows total productivity as compared with man-hour productivity. Here again the industry has done very, very well, except for a couple of new ones like air transport. It was a little bit lower than electric and gas utilities, which also had a phenomenal expansion over this period.

[Table 5 appears in exhibit 1 at the end of Mr. Nathan's oral testimony.]

Mr. NATHAN. I would just take one moment and refer you, if I may, Mr. Chairman, to page 29 of my full statement. There we have taken some of these selected industries and ranged what has happened to these industries compared with the telephone sector.

Here we see, in terms of growths of various measures, over these periods of years from 1940 to 1973, or 1947 to 1973, depending upon the data availability, telephones were way above the national average, and exceeded only by air transport, radio and TV, and also by gas and electric utilities.

I do not mean to imply, Mr. Chairman, that there are not also other industries one could find that have grown faster. We did take a few of the larger ones for which we could readily get data.

In terms of price change, the telephone industry has had a good performance, less than the U.S. average. We see, even in employment, despite productivity improvement, better performance than the average.

We see in the output per man-hour, growth that is way up high as compared with the U.S. average on any other industry.

Then I think the fascinating parallel is the rate of return, where it is way below most industries.

In sort of a summary, looking at these tables, Mr. Chairman, I would say that what we seem to have seen here is a performance by a monopoly industry which has pretty much all of the characteristics one would expect from dynamic competitive enterprise.

I must say as an economist, it is hard to explain this entirely. I have even talked with some of the leaders of the A.T. & T. about this. I have asked them how, in an industry where the profit potentials are limited as a result of regulation—where the rate of return has ceilings set by regulation—they have been able to achieve so much in productivity, so much in innovation, and so much in new research and development.

Whether out of modesty, or whatever it is, I have not been able to get a very definitive answer. It is my view that the management of this industry, over a considerable period of years, has revealed a vision and a perspective and a set of goals that are quite admirable. Having started from the very beginning with the idea of developing a national system with the purpose of getting as much coverage as possible so that the fundamental services of this communications system would be very fully served universally; namely, that communication would make it possible for the maximum portion of the people and firms in the community to contact each other.

By the way, this problem of performance and the problem of universal access. Mr. Chairman, I couldn't help but think about when I heard Mr. Whitehead this morning saying quite blatantly that anybody ought to be able to buy any equipment they want in the open market at any time.

Now I share some concern with him; but I am shocked that he does not recognize that you are here dealing with a network; and it is a little different from other industries in the sense that unless there are protective devices, in the sense that one is precluded from doing things that may hurt others, one can diminish the benefits to others rather than enhance total benefits.

In the telephone system it is different from the electricity system. If I want to be foolish in my own home and install certain things contrary to, say, a building code; and I take a chance on fuses blowing—by the way, some of this does not happen out of poor design or poor quality, but by bad decisions by the consumers.

I have a house, and I do not know why they put so much equipment on one fuse. It seems to be blowing all the time. We are having the system wiring changed because of that.

We are hurting ourselves by this kind of situation; whereas, here we are dealing with a communications system where you have two-way passage; where one can really bring about a breakdown in an

area or in a whole sector or a whole community. There I think it is a much different kind of problem. One must exercise controls over compatability, quality and performance.

Now it may be petty to say this, but I look upon my telephone as not just an opportunity for others to contact me, but also for me to contact others.

To the extent that others may engage in activities which preclude continued service of quality in my getting in touch with them, I regard this as a diminution of my service as well as theirs.

This, in a sense, is why I believe, Mr. Chairman, we have to recognize that this industry has some different characteristics and different facets relative to other kinds of services and even other kinds of utilities.

Now, basically what we have to do then is to face the fact that on the one hand we have had a very satisfactory and a very remarkable growth, and a very impressive quality and scope of services that have evolved over the past. We have had very important links between technology, operations, maintenance, equipment, prices, and the like.

We have had good performance, we have had good compatability, and we have had good quality.

Now the question is, What kind of problem or opportunity does this issue of competition pose in this particular area?

I think we really have to ask ourselves whether competition can or may make a further contribution and where? Is it necessary? Do the new technologies require that we have competition where we haven't had it in the past?

Again I would say, Mr. Chairman, that I certainly favor the introduction of competition to the extent it can be done without, in any way, affecting quality and affecting performance and affecting pricing and affecting other objectives.

This is in a sense what I would like to contribute here, observations about this problem. I would like to discuss it very briefly, Mr. Chairman, with respect to two aspects. One is the interconnecting devices, the terminal devices. The other has to do with specialized carriers.

As far as interconnecting and terminal devices are concerned I think the most important single criterion that one has to emphasize concerns compatability and performance and maintenance. This is the issue, fundamentally. If somebody wants to put in a squawk box for conference calls in the office I see certainly no objection to that, provided this two-way system, whose continued performance is of such great need if we are going to have a modern communication capability, and a modern, highly developed expanded society, is not interrupted, as long as we can be confident to a very high degree that there will not be any compromises with quality.

As I read Mr. Whitehead's statement this morning, as I read the statement of the National Association of Regulatory Officials, as I read the report some time back of the task force of the National Academy of Sciences, as I have looked at other materials, it seems to me quite clear, Mr. Chairman, that there is a recognition that we are dealing with an extremely complex problem.

This is what worried me about Mr. Whitehead this morning. I thought his emphasis was that this is nice, simple matter; and all we need to do is let anybody put any equipment on the end of each line, with very little recognition of the complexity of the problem, very little recognition of the need for compatibility, very little recognition of the need for quality.

I emphasize those words.

What makes this system important to you, to me, and important to people in political life, social life, economic life, whatever we are dealing with, is that we have a very real problem of quality.

I find it less than helpful to ignore the complexities of this situation.

Now, some people say the answer lies in certification.

Senator HART. I was going to say that I think that is what he said.

Mr. NATHAN. Well, it was sort of implied, but there are real questions of who certifies? If I were the Bell management, A.T. & T., to be honest with you, Mr. Chairman, I never said this to any of them, I am not so sure how proper it would be for them to accept the responsibility for certification if that were the route that were to be taken.

All they have to do is not certify some poor little fellow out in Athens, Ohio, who comes up with a fancy device and they are in trouble. They will be in trouble all the time on questions of whether the test is serving their own purpose and whether they are trying to protect their own productive capabilities and revenues and whatever it is.

The main emphasis, Mr. Chairman, is what we have here is a problem of compatibility; and the difficult questions are who decides it; who enforces the specs; what are the tolerances?

Another question is, Can the regulatory process handle this issue? Who will pay the cost to who controls the maintenance? Who controls that interconnecting device?

I certainly have no basis whatsoever, Mr. Chairman, nor any inclination to say that certification is not possible. But I say that, we must assure compatibility—having the kind of a communications system we have with the quality and performance we have. I just think that the other side of what Mr. Whitehead said makes sense in a rather considerable degree; namely, that we better be deliberate—I think he used the word “deliberate”—in making these changes.

I thought there was some inconsistency in what he said at one point with the other. I don't think we ought to just do nothing about it. A great deal of deliberation is needed in view of the quality we have and also the problems that derive would require a considerable amount of care and assurances in thinking through proper procedures.

As far as the other side of the picture is concerned—namely, specialized carriers, as I have testified, Mr. Chairman, before regulatory utility commissions in more than a half a dozen States—I suppose including power companies and the like it's been 10 or 12 States—and it is only fair to say that these commissioners, being elected or selected through the representative democratic process in

our society, cannot help but think of the public interest, at least as they interpret it.

I do believe there is very significant averaging of prices in utility rates, especially telephone rates. I don't think one can say, as Mr. Whitehead said, that since the special instruments today, or the special carriers would provide only about 5 percent of the total revenue, their decrease in dense-route rates won't result in a shifting price structure of significance.

This is totally unrealistic in an economy where you have constant changes in rate patterns, in rate structure.

If anybody honestly thinks, Mr. Chairman, that if there were going to be deaveraging as a result of the cream skimming on the high-density routes by new specialized carriers and that deaveraging was not going to go in throughout the process, then I think they are really unrealistic about the world in which we live.

If I am not mistaken I think Mr. Whitehead said that you can have the deaveraging of the nonbasic system, and then you will not have to have a deaveraging of the basic system. I just cannot believe you could have such a nice, neat line of demarcation between the basic system and these specialized services, and that the deaveraging, or the unbundling, or whatever you want to call it, isn't going to take place all across the board.

I believe if we ever move to allocated costing in this industry we are going to have very, very major trouble. I am not saying this shouldn't be done. All I am saying is in this process we better be pretty clear what we are doing, how far we are going, and anticipate where these changing policies may eventuate.

In conclusion, I think efficiency is the most important objective. We have to estimate the cost to society of risking efficiency and quality.

In the telephone industry, by the way, Mr. Chairman, as distinguished from other kinds of public utilities. I do believe that we have an external problem; namely, efficiencies that flow out of this system and that flow back and forth to the degree you don't have in practically any other public utility. That needs to be taken into account. I believe that when the early developers of the Bell System came up with what appears to be a fairly clear objective, namely, to maximize the coverage and to get a system as nearly universal as possible so that the benefits would be there for all persons involved in that system, they made a tremendous contribution. It seems to me that if we are going to move toward deaveraging rates with rising costs of basic service we better consider very carefully what the implications are going to be.

In my judgment, Mr. Chairman, we are dealing here with what I say in my testimony is a seamless web of very complicated rates. It is not very helpful to just brush this off as a minor and insignificant factor as some have done.

Finally, I believe that what we have involved here ahead of us is a very real problem of how to deal with this competitive problem and at the same time maximize benefits of the system.

Mr. Chairman, I would be the last one to say there are no aspects of this telephone communications system that might not lend them-

selves to competition. Our society just does not operate that way, either in the sense of being rigid or welcoming no innovations. Change is always prevalent. There are those who don't like change, but change is the very essence of our lives and will continue to be; but I—importantly—would add that as changes are made we ought to try to see ahead what these changes are likely to yield and cost.

In judging how we go about these changes, Mr. Chairman, we have to very carefully consider costs and benefits.

I don't believe in competition for the sake of competition. It is not necessarily desirable to move from a public utility monopolistic position to competition. But I think where it can be demonstrated that competition does add—and by and large it does—and it gives to mankind the best economic benefits relative to any other kind of system that has been devised. We should welcome it. But I believe we should not ignore the fact that on the whole our regulatory process has not done badly.

I say that despite the fact that I am very critical myself of the many aspects of regulatory process. I think the IOC is an example of encrusted regulations with old concepts and principles that were not adjusted and adapted to changing technological circumstances, and changing needs for allocation of resources.

As a matter of fact, Mr. Chairman, I am critical today of many regulatory commissions. I don't think they have adjusted and adapted to the miserable inflation we are suffering and which have put utilities in almost an impossible position.

I think the regulatory agencies of this country have done a terrible job on mass transit. This was an area where, whether we like it or not, there were all kinds of benefits flowing to private activities.

From an environmental economic point of view I am not at all sure that our society is better off with everybody driving cars, and often one person in a car, rather than using mass transit. In part, this is attributable to regulatory inadequacies. On the other hand, some people could say it was too much regulation.

Whatever it is, Mr. Chairman, I think we are today dealing with an extremely complex problem here. I foresee an enhancement of competition in terms of the purchases by Western Electric or the access of other producers.

But we have got to be awfully sure that we don't destroy that which is very good, in trying to make changes, to get competition. Now let me just make one final observation, Mr. Chairman. That is this: I honestly cannot see how the divestiture of the operating Bell companies would contribute to competition. I cannot see how making 23 Bell companies into separate companies would contribute to our society. I have seen how the personnel in the Bell System handle themselves. I have seen changes of management. I have seen the procedures and practices learned and moved and passed across the board among the companies. I have also worked with electric companies that are independent.

I do believe where we have an important and excellent national system, I cannot believe there would be any improvement through breaking up the corporate entity of the Bell System. I honestly cannot believe there would be a maintenance of the kind of research

and development that has been done if we were to follow some of the earlier recommendations that we should take all the operating companies and make them into separate companies; and keep Long Lines separate, and make Western Electric completely independent, and Bell Labs, too.

I just cannot conceive of Bell Labs ever operating the way it has were it a totally divested entity. I would end up, Mr. Chairman, by saying that I hope the vigor of competition may be introduced here and there, but I believe there would be greater danger and certainly greater cost relative to benefits if it is not done well and carefully.

I will use the words of Mr. Whitehead; namely, do it with real deliberation and care. We now have something good; let's not risk it and take a chance of cutting it up and cannibalizing it before we know where we are going.

Senator HART. Thank you for the very effective summary. Now you are an old enough hand around here to know that I did not dig up this quotation I am about to give; and it is not yours. But following what you have just told us about the sensitivity of the system, and the need to safeguard it from blowing up because some fellow overloads the fuse box; if I didn't know you so well and have such great respect for you professionally I am not even sure I would read the quote.

I am comfortable in saying that it comes from a speech made by a fellow who used to be the FCC Common Carrier Bureau Chief, Mr. Strassburg. It was delivered at the 74th Annual Conference of the North American Telephone Association. Here is what he says:

The time is long overdue for relegating to the trashcan the economic hocus-pocus which is deliberately being used to fog up the interconnect services. Let us face the realities that the interconnect market is not a natural monopoly and that it is logically and inherently a competitive market, that interconnect is doing the job for the public, and that interconnect should no longer be used as a whipping boy for the frustrations of the regulator in coping with the more critical issues involved, for telephone service.

Now he says that this repeated counseling, that while competition has appeal, and would seem to be desirable that I as a user be free to buy any kind of terminal service I wanted and could get, that that really isn't true because we have a system which, as you have described, is superior to any in the world, and my private decision to use another communications box may put out of commission the whole of the northwest side of town.

How do you react to Mr. Strassburg's statement?

Mr. NATHAN. Well, I know him. I have a lot of respect for him. I would just say that the question is one of compatibility. Often it is a question of what one means by a word. The question as to whether or not the terminal equipment in interconnection is a natural monopoly, I think that is not debatable. Obviously it is not a natural monopoly. There is no natural monopoly about a squawk box or somebody wanting equipment to record a call—legally. I think the question is, What does this do in relation to the natural monopoly? Now I think if we can develop devices—and A.T. & T. has done this where they have these interconnecting devices and where the

device prevents abuses within a home system from going out beyond it—I say this is perfectly proper.

It is not entirely proper because as I say, Senator, when I buy or use a telephone system I like to have access to everybody. Basically I think that if an individual really wants to use this equipment, then I think there ought to be a provision that that individual has to permit or provide an interconnecting safety device.

Some people, of course, are smart enough to get around that. I happen to have a car that can't be started unless you fasten the seatbelt. They say, "Oh, I know exactly what you do to avoid using the safety belt. You reach under here and take this fuse out and then you do whatever you want." Well, if a person wants to cut his head off, maybe we can't stop it, except I don't like cars to hurt others. There can be adverse consequences to others.

Fundamentally I think the problem is how does one do this, Mr. Chairman, without interfering with the compatibility and quality and assurance of performance? That is where the issue lies. I am sure that over the years we are going to develop instruments, devices, controls, or standardization, or certification, that will permit us to do this.

I have looked in the New York Times on Sundays where I can find advertisements for telephones. As I recall I have seen them as low as \$8 and \$9 and as high as \$55 or \$75. Maybe an \$8.98 instrument can be put into a jack and work. Maybe it won't work.

I think it is perfectly proper for the system people to say if one is going to introduce any kind of device he must take steps to protect the system from that device.

Certification may be the answer. All I am saying, Senator Hart, is that let's be sure when we accept that answer that it will work. We can't be totally sure; nothing is sure in life. Let us try to make diminimus those risks that modern technology permits us to avoid.

What bothers me about Whitehead's statement was that anybody ought to be able to buy anything he wants. I have been around long enough to know you can buy junk and sometimes you can get hurt.

It is like medicines. Without the FDA you know what happens. Some people put stuff in medicine that will blow your head off unless there are regulations.

There are not just risks in foods and medicines. We can get all kinds of things that can be harmful. I remember back when people said that the SEC was the worst denial of human freedom man ever conceived. You could go out and sell a sucker something for \$10 a share that wasn't worth anything. It was contended that was freedom.

We have learned how to provide protection and still afford opportunities.

Senator HART. We are in agreement it is not a natural monopoly.

You would agree, I know, that when a sophisticated commercial enterprise, after a study, determines that someone's system other than Bell's best serves their business need that Bell and everybody else should respect that judgment in terms of facilitating the achievement of it; don't you?

Mr. NATHAN. With the provision, Senator, that there are safeguards of that choice, no matter what happens, that it will not interfere with the basic operation of the system.

Senator HART. If that condition was not implicit in my suggestion it was meant to be—and that the system was manned by persons skilled in communications.

Mr. NATHAN. Yes.

Senator HART. We have had testimony that that doesn't happen. Sophisticated and knowledgeable, sound device communication companies have sought to make a substitution. Some of the devices tended to prevent them achieving it, some almost pre-SEC, in fact.

Mr. NATHAN. I am sure there are people who are overly eager—

Senator HART. You do not favor that?

Mr. NATHAN. Certainly not.

On the other hand, I must say there has to be somebody who makes the decision. You know, the thing that shocks me, Senator Hart—and this involves your State, and involves our economy—is how we make mistakes in cars. General Motors is not an insignificant company. I bought a Vega for my son, and he kept telling me how it was getting hot out there in California where he lives.

I said, well, you better take it in. He didn't seem to be getting anywhere. Suddenly, the Vega was recalled. This is a big company, an old company, lots of resources, a lot of talent, a lot of technology.

All I say is, let anybody use what they want, provide that any cost are relatively contained. That means somehow you have to have a kind of protective device in the use of devices for telephones.

Senator HART. I was around here when that company was telling us we were out of our minds to intrude to the degree of having them obligated to recall.

Mr. NATHAN. Yes. I remember.

Senator HART. Mr. O'Leary?

Mr. O'LEARY. Mr. Chairman, we have a few documents that we would like to put in the record. I think I might like to get Mr. Nathan's reaction to at least one of them.

These are documents which have been furnished to us with respect to the Bell System. The first is a letter from a Mr. Hubner of the Southern New England Telephone Co. to a Mr. Bonsack of A.T. & T. dated January 12, 1972.

Mr. O'LEARY. Doctor, if you will glance at the second paragraph on the first page of that letter you will see that it's a discussion of why Southern New England Bell has purchased some PBX equipment from the Nippon Electric Co. and it compares some of the features and some of the reasons why it bought that equipment as opposed to equipment manufactured by Western Electric.

On the second page a number of considerations are listed. The second is the Western Electric Co. vehicles do not at this time offer a significant advantage as regards the features, maintenance, operations, or cost.

Given the testimony that we have received from you and from others about the economies of scale that Western Electric possesses, how do you react to the suggestion that Nippon Electric is able to

offer a product which apparently New England Bell finds, in some respects, better and at least costing no more when you take into consideration that Western does not bear the added cost of a marketing or sales force?

Mr. NATHAN. Well, I think, Mr. O'Leary, the answer is quite clear. Japan is often in an exceptionally good competitive position with the simple beneficial relationship of their technology relative to their labor costs. Japan has very low wage rates.

They have the capacity to copy and adopt and even enhance technological elements from other countries. This is what has given Japan a tremendous expansion in exports over the years. I welcome it as one who favors high levels of trade. I say, Senator Hart, this is why I parted company with my labor friends on trade policy.

Senator HART. Put a little in the record to protect my friends there.

Mr. NATHAN. I think we tend to get too protective. I am afraid our friends in the trade union movement have been in the forefront of that area. I favor competition.

Look, what we have in the world, Mr. O'Leary, is a constant shifting of trade and product benefits where a country gains or loses competitive advantages as conditions change. I have done a lot of work in Korea. Korea has increased its exports 40 percent a year compounded in the last 15 years.

In 1960, Korea exported \$30 million a year. This year, they will achieve over \$2 billion in exports, because they learned how to adapt and adjust, technologically, and even how to move ahead on new products and processes, and with low wages.

As far as I can say on this particular letter, I think it is admirable that this subsidiary company said to Western Electric that you don't have this particular qualification and we are going to take something else. As long as they were confident of the compatibility and the quality and the performance, that was commendable.

I think this was an entirely proper move.

Mr. O'LEARY. It's my understanding that when New England Bell installed that Nippon Electric PBX, it does not insert an interface device. Yet, at the present time, if someone else offers a user that same equipment, an interface device is required. Doesn't that strike you as somewhat unfair?

Mr. NATHAN. I have no idea of what their markup is on this PBX and whether there is provision for maintenance so that the maintenance service is covered.

You see, one of the problems we must recognize is that when people get into trouble with equipment, whether it's provided by the Bell System, or the local company, or whether it's provided independently, almost invariably, as I understand it, the maintenance people from the telephone company will be called to come out to service it.

Sometimes I have heard they refuse to provide maintenance on the equipment with which they had nothing to do. It is entirely possible that where the PBX of the Japanese company is provided direct to a user, the New England Bell may not want to be responsible for maintenance of that equipment because of cost.

It's perfectly understandable; not that they couldn't do it, because if they are putting in the same equipment themselves they can certainly maintain it. They may not want to service it without added charges, and therefore may insist on some kind of inter-connecting device.

Mr. O'LEARY. The second document that has been furnished you, if you would turn to the last page—this is an agenda of items for discussion. This being the last one, entitled "Paradox of Bell-Owned Service Customer-Owned."

Underneath that "Bell marketing of Japanese PBX and Maxicall, no connecting arrangement required. Customer purchase of equipment from supplier connecting arrangement required."

As an economist doesn't that seem somewhat unfair given the fact that it is the same equipment; and if the Bell System installs it, there is no connecting device? Yet if you buy it, the same equipment, from an independent company one is required?

The user has to pay that additional cost.

Mr. NATHAN. I agree. On the surface this looks unfair and improper trade practices. But, as I said before I have no idea what the maintenance problems may be. Mr. O'Leary. That is one question.

I will raise another problem. I am not a technician. My wife is a much better mechanic than I am. What if there are installation problems? Somebody installing this may not be as careful as the Bell telephone personnel. Often we find this. We bought a—I won't mention the brand—refrigerator for our office. We have a kitchen where our employees eat. We never could get ice out of it. We spent \$50 or \$60 for the ice compartment.

Finally, I raised so much Cain, and I called the president of the of the company whom I knew. They said they would check it. They found somebody had fixed this darn thing by putting the insulator piece below the plate and right on the coils. The result was that between this insulation piece and the coils we got a layer of solid ice. The result was that it never functioned.

Finally, when we raised enough complaints they came and found out there had been—I think it was done by the first repairman—a completely wrong installation.

If the Bell installer did something wrong, I think he ought to be required do it right and without cost if Bell installed it, but not if others did the installing of a piece of non-Bell equipment.

I am not saying that you cannot overcome these kinds of problems. On the surface this would appear wrong, but then I would have to ask you, Mr. O'Leary, how much is the cost of this connector that was involved here, and connecting arrangement, and is that relatively reasonably related to maintenance provisions and the like?

I don't know.

Mr. O'LEARY. Let me ask you this question, Doctor: do you think the FCC decided the *Carterfone* case the right way? As an economist do you think that was a right decision?

Mr. NATHAN. Well, I think that wasn't a very good case, the fact that the case came up on that particular device. I didn't read any technical descriptions. If it had to do with technical matters relating to that particular instrument, I see no reason why putting a hush instrument on was wrong and I would let it go ahead, as was decided.

If there were evidence of possibly serious technological problems, that would be one problem. But if it was clear this device had nothing to do with compatibility or performance, I would say fine.

Mr. O'LEARY. Would you agree that the Bell System has been more innovative in bringing newer products to the markets since the *Carterfone* decision?

Mr. NATHAN. I honestly don't know.

I have got to say, Mr. O'Leary, that I have had contact with them over the last 8 or 10 years and have been tremendously impressed with their innovative performance.

A lot of people have said they don't bring new equipment, new devices into operation quick enough. All I can say is that from an economic point of view if you make changes faster it can cost more.

The question is: what is appropriate?

I have sat before regulatory agencies. They say we are not going to raise the depreciation rate. We don't care about new instruments or technology, we don't want to grant a higher charge.

If you don't raise the depreciation rate where are you going to get the means to permit a more accelerated rate of technology innovation?

On the whole I don't know whether what you say is correct or not. I am just not aware of it.

Mr. O'LEARY. Recently the North Carolina Commission has come down with a decision banning the sale of interconnect equipment?

Mr. NATHAN. Yes.

Mr. O'LEARY. Would you agree that is a wrong decision?

Mr. NATHAN. I happen to know that commission. I will be there, as a matter of fact, in Raleigh, tomorrow, meeting with them not on A.T. & T., but on other matters.

I would say an absolute ban raises very grave doubts. I would say a ban subject to protective assurances and devices would make sense.

Mr. O'LEARY. Thank you, Doctor. I have no further questions.

Senator HART. Mr. Chumbris?

Mr. CHUMBRIS. I know the time is getting late. No doubt about it, Dr. Nathan has presented a full and complete statement. I don't see any need for me to ask him any questions. I think the record is sufficient in that matter.

Thank you.

Senator HART. Thank you very much.

Mr. NATHAN. Thank you, Senator.

Senator HART. We are adjourned, to resume July 30.

[Whereupon, at 2 p.m., the subcommittee hearing was adjourned, to reconvene on Tuesday, July 30, 1974.]

[The following was received for the record. Testimony resumes on p. 3995.]

MATERIAL RELATING TO THE TESTIMONY OF ROBERT R. NATHAN

EXHIBIT 1.—*Prepared Statement of Mr. Nathan.*

PREPARED TESTIMONY OF ROBERT R. NATHAN, CONSULTING ECONOMIST,
ROBERT R. NATHAN ASSOCIATES, INC., WASHINGTON, D.C.

Mr. Chairman and members of the Subcommittee, my name is Robert R. Nathan, and I am a consulting economist and the president of Robert R. Nathan Associates, Inc. of Washington, D.C. I have been engaged in economic research and analysis and in the formulation and evaluation of economic policies in the service of the U.S. Government and in private practice for 40 years.

In 1933-34 I worked on the preparation of the first official national income studies in the United States, and from 1935 to 1940 I was Chief of the National Income Division of the U.S. Department of Commerce. Starting in 1940, I served on the staff of several agencies planning and administering defense and war mobilization in World War II. I was Chairman of the Planning Committee of the War Production Board, and later Deputy Director of the Office of war Mobilization and Reconversion.

For the past 28 years I have been president of our firm, engaged in economic consulting to the U.S. Government and governments abroad, to states and cities, to international organizations, to businesses, trade associations and labor organizations on a great variety of economic matters.

We have conducted many analytical and policy studies for a variety of American corporations, trade unions and nonprofit organizations; for Government agencies, including the Department of Justice, the Defense Department, the Department of Commerce, the Department of the Interior, the Department of Agriculture, the Department of Labor, the Agency for International Development, the Economic Development Administration, the Office of Economic Opportunity, and the Bureau of the Budget; for states and cities of the United States, including the States of Connecticut, New Jersey, New York, Pennsylvania and Wisconsin; and for the District of Columbia, the cities of Philadelphia and New York, and the Port of New York Authority.

Over the years I have written widely in the field of economic policy. I am the author of *National Income of the United States, 1929-35* (Washington: U.S. Government Printing Office, 1936), *Mobilizing for Abundance* (New York: McGraw-Hill, 1944), *National Wage Policy for 1947* and *National Economic Policy for 1949*. I have contributed articles to many professional journals and have prepared and presented testimony on numerous occasions before congressional committees on taxation, fiscal policies, foreign economic policies and other economic policy issues.

I am a Fellow of the American Statistical Association, and was a Vice President in 1940. I am a member of the American Economic Association, the National Planning Association, the Council on Foreign Relations, and the Society for International Development. In 1958, I was appointed as a member of the National Commission on Money and Credit, which completed a comprehensive 3-year study of America's money, credit and fiscal system. I am a member of the *Time Magazine* Advisory Board of Economists. I am a trustee of the Committee for Economic Development, and a member of its Research and Policy Committee. I am Chairman of the Board of the Population Reference Bureau, a member of the Board of Trustees of the Asia Society, and Vice President of the National Economists Club.

I am appearing here on behalf of AT&T to share with you some observations about the economics of this industry, growing out of 40 years of practice as an economist concerned with public issues, in and out of government, including a great deal of work on public utilities in franchise and rate cases before Federal and state regulatory agencies.

I. THE PROPOSED INDUSTRIAL REORGANIZATION BILL AND THE TELEPHONE INDUSTRY

As I read the language and the intent of the proposed bill, it proceeds from a presumption—rebuttable, to be sure—that bigness and concentration, *per se*, tend to produce consequences associated in economics and in law with monopoly: excessive market power to control production and prices, to blunt competi-

tion in technology and product, and to command inflated prices and profits. The bill, as drawn, is aimed to diffuse "excessive power," where it is found to exist, by requiring changes in structure, organization, and practices to restore the benefits of competition.

I support the objectives of a competitive economy and abhor the abuses of monopoly. Since the days of the Temporary National Economic Committee nearly 30 years ago, I have been an advocate of competition not only as an essential attribute of an enterprise economy but specifically as a means of harmonizing the objectives of price stability, or at least price restraint, with the objectives of full employment. We look to competition to stimulate economic and technological efficiency, to make supply responsive to changes in demand, and to restrain prices in periods of high demand and high employment. Without it the enterprise economy loses much of its dynamism.

I must note, however, that these criteria do not fit the case of regulated public utilities. Though they are, in varying degrees, monopolies in all or part of their public utility functions, the fact of regulation itself precludes the forms and consequences of monopolistic behavior which your bill is designed to prevent, most particularly in respect of their prices and profits. Clearly in their regulated jurisdictional functions they are not covered by the blanket proscription of monopolies or oligopolies or market domination or limitations on entry. Their legal status, defined by statute, administrative regulation, and certificates of convenience and necessity, is itself a reflection of their unique economic characteristics which render unrestricted entry, uncontrolled pricing, and free market decisions as to kind and quality of service infeasible in the public interest. As a condition of their legally defined status, they are required to serve their defined jurisdiction, even the least profitable segment of it, at rates approved by regulatory decisions.

A special status attaches to those utilities which are natural monopolies, meaning that it is inherent in the nature of the business that one firm can operate at lower costs than two or more firms. Thus, a local electric or gas distribution company or a telephone company can provide additional units of service at lower cost than any "competing" system that would have to duplicate the distribution or switching facilities. It has long been recognized that such industries were monopolies by their very nature, and that the public interest was best served by preserving them as monopolies and, as such, regulating their service, their prices and their profits.

The thrust of the regulation has been social and political, as well as economic, in its purposes and effects. Though certain economic criteria are prominent objects of regulatory attention (e.g., rates of return sufficient to attract the capital needed for expansion and improvement), much of the underlying rationale of registration derives from the fact that energy, transportation, and communication services have become, literally, a "convenience and necessity," and that both the nation's well-being and the equity of all affected parties require the franchises be exercised so as to optimize their social utility and external economies. This is the essence of the public interest in regulated utilities, as it has evolved in the 20th century.

The telephone industry, including both the Bell companies and the hundreds of interconnecting independent local telephone systems, has been treated for regulatory purposes as a system of natural monopolies. The regulation embodies the social and economic necessity of universal access to telephone service and the obligation of the industry to provide it. It determines the distribution of costs among users and the trade-off of costs and social benefits within the system as a whole. It prescribes a structure of rates which will effectuate this distribution of costs and at the same time yield a total return on total capital no greater than necessary to enable telephone companies to compete in the markets for capital. It encompasses surveillance over standards of performance, equipment, and maintenance. Even the subsidiary manufacturing activities, vertically integrated with the switched network as the providers of equipment of specified and proven performance and compatibility, have been effectively regulated by review of the reasonableness of prices and profits.

In the context of this hearing, I will try to focus on those aspects of the telephone industry which relate to the policy issues raised in the bill. We need to examine the industry to determine whether its performance could be improved in the public interest by imposing additional regulation aimed at

promoting competition. We need to assess the cost, against the putative benefits, of enforcing competition in some form, for its own sake, in the telephone industry or its components. Furthermore, we need to explore the implications of competition in the telephone industry in terms of the impact on the structure of prices and on the distribution of costs among users.

II. THE ECONOMICS OF THE TELEPHONE INDUSTRY

The Economic Characteristics of the Industry

A Technical and Economic System

The U.S. telephone industry is the paradigm of a "system" (in the technical as well as the colloquial sense of the term) of a nationwide communication network. Much the greater part of the system is owned and operated by AT&T, but there are about 1,800 independently owned local telephone networks which are interconnected and integrated with the AT&T system.

In design, structure and operations, the system is intricately integrated in several dimensions in ways which largely dictate its economic characteristics. The network itself is horizontally integrated to provide a single communications net comprehending the entire country and connecting it to the rest of the world. This imposes the most stringent requirements for compatibility throughout the system, in respect not only of hardware design and performance but also in operating structure and procedure, planning and investment financing, levels and structure of rates, etc.

The vertical structure of the largest component of the industry, the Bell System (and much of the independent industry as well) is also integrated "end to end" in order to ensure the required horizontal compatibilities. From research in Bell Telephone Laboratories, through joint development by Western Electric and Bell Labs and procurement and manufacture by Western Electric, to installation, maintenance, and operation by the operating companies, the process is in fact integrated to relate the research to the operating standards, and the maintenance to the quality of service.

The management of such a system, as a system, requires yet another mode of integration which I call the "time dimension," phasing the design, engineering, and manufacturing to the research and development, on the one hand, and to the financing, investment, service, cost, and revenues, on the other. This is the mode of integration that determines the answers to the perpetual question: How fast, in the public interest, should new technology be introduced? If it were introduced too slowly, the system's users would have to accept standards of service lower than the system could produce, at prices higher than they should be because efficiency is less than the system could attain. If it were introduced too fast, the users would have to bear costs of too rapid depreciation of equipment prematurely obsolete for the sake of what might be marginal improvements in service. The interactions between the Bell System and regulatory agencies in matters of phasing and innovation lead to decisions based on balancing technological factors, costs and service levels.

The systems management decisions aimed at optimal rates of introduction of new technology involve continuous calculations of the service-improving, cost-saving characteristics of new equipment versus replacement and expansion requirements, the costs of new investment, and the capacity for putting it in place. Given the state of the telecommunications art at any time, these are essentially economic calculations based on the trends and characteristics of demand; on the costs of materials, labor, and money; and on the capacities and efficiencies of manufacturing, construction, and operation. In monopolistic sectors of the economy these questions are resolved by competition among sellers and responses of buyers, deciding individually in their own interests. But in the telephone industry variations in service and in equipment are effectively limited by the network characteristics of the system, by the stringent requirements of compatibility and reliability, by the costs to users, of premature obsolescence and by the diseconomies of proliferation of equipment designs. Consequently, changes must be introduced systematically, according to plan and appropriate lead times, and on terms and conditions that, in the final analysis, are determined by regulatory authorities. The systems characteristics of the business decisions, no less than the technology, link these factors into a system that would be difficult, and even hazardous, to try to take apart.

A Regulated Monopoly

The telephone system is a notable example of a natural monopoly as I have described this above: the economies of scale and the condition of decreasing cost are evident in every telephone system. To my knowledge, no one suggests that any public (or private) purpose would be served by duplicating telephone facilities in a local area. (I remember when there were two systems in Philadelphia, but diseconomies reduced this to one.) The same characteristics describe the nationwide switched network (and its continent-wide and worldwide connections), and are reflected in the interrelationships between the corresponding jurisdictional regulatory functions.

This mutuality of interest is expressed in the close, quasi-official relationship between the FCC and the National Association of Regulatory Utility Commissioners (NARUC). Though not always in total agreement, NARUC and the FCC are in continuous consultation. NARUC is a party to many of the FCC proceedings. The separation of accounts between the interstate and the several intrastate services, which affects the rate base in each jurisdiction for the purposes of rate-making, is common to the FCC and the state commissions. Moreover, Federal and state authorities exercise implicit regulatory jurisdiction over the manufacturing and procurement activities of AT&T; the inclusion and pricing of equipment allowed in the rate base of each operating telephone company are matters of explicit concern and consideration in both Federal and state regulatory decisions. Questions are continually raised concerning the allowables in the rate base and the prices charged by Western Electric. (A major investigation of the reasonableness of these prices is now in process before the FCC.) Regulatory inquiries have found that Western's earnings have been lower than the average of other large manufacturing corporations. We know of no commission decision that has held Western's prices to be excessive relative to prices of other manufacturers. Several commissions have held that Western Electric equipment sold to a local telephone company may not yield Western a rate of return on capital higher than the rate of return allowed the local operating company.

The treatment of the telephone industry as an integrated system had its origins in the technology and is deeply embedded in the economics of the industry: its productivity and cost characteristics; its demand, marketing, and pricing characteristics; its planning and investment programs; and its operational characteristics. The spectacular productivity increases, of course, have been the outgrowth of the application by integrated management of the fruits of the research and development carried on by the Bell Telephone Laboratories and Western Electric. The increases in productivity, along with the steady growth of the telephone system, have made possible the deciding relative prices of service which are a prominent feature of U.S. telephone economics. These, in turn, have made possible a marketing strategy aimed at reaching a mass market and making telephone use all but universal in the United States by taking advantage of differential elasticities of demand to maximize the capacity and utility of the system. The continuous expansion requires a massive program of investment (in 1974, a total of \$10 billion is scheduled) through which the technological fruits of system research and development are phased into service. The process is a chain reaction and is continuous.

What we have here, in fact, is a system that has been put together by a series of inventions and innovations, decisions, commitments, investments, and institutions evolved over nearly 100 years. For example:

The decision to develop the telephone as a switchboard network rather than for point-to-point communication

The decision to establish a laboratory to develop the technology

The decision to price the service to individual subscribers in such a way as to extend the market to everyone wanting a telephone (on the theory that the more telephones there are in use, the more valuable each telephone is to the user), and the commitment of vast sums to investment in making this possible

The decision to retain responsibility for equipment installation, maintenance and replacement

The decision to integrate research, development, manufacture, and operations in a common technological framework.

An institutional framework has been developed to regulate the level and schedule of rates of return, investment, depreciation, accounting, and pattern

of services, both intra- and inter-state and international. Over many decades the regulatory system, in response to social, political, and equity objectives—as well as economics—has spun a very nearly seamless web of rates, reflecting varying price elasticities for various services and yielding rates of return in the aggregate within the range allowed by regulation. The fact that, in relation to the rates, the costs are (or appear to be) higher for some services than for others reflects varied regulatory policies and regulated marketing decisions going back over many years of averaging costs and of charging uniform rates for similar services (even though actual costs over different routes may vary substantially) and of differentiating prices for different services on the basis not only of cost but of other factors such as value, demand, and elasticity of demand.

For an economist, it would be possible, if we were starting from scratch, to construct a hypothetical alternative scenario which would be structurally, functionally, operationally, and economically different from what has evolved, with different relationships between research and development, manufacture, installation, and operations, and different relationships between costs and prices. Whether it would better serve the interests of the nation is problematical. Economists are more comfortable with pricing that hews closer to the theoretical "long-run incremental cost." But the point is that we are not starting from scratch. We are starting with the world's best telephone system, and it is in no one's interest—least of all in the public interest—to take it apart functionally or organizationally and risk impairing its usefulness in the doctrinaire search for unprovable improvements. Even as we consider how to make it perform better in the interest of the economy, it is worth taking a look at its record of performance.

Economic Performance of the U.S. Telephone Industry

Though it is a natural monopoly in many aspects, the U.S. telephone system performs in essential respects like the model of a competitive industry.

The performance of the Bell System as a system (interconnected with other smaller independent systems), in its essential economic and service aspects, has been determined for the most part by managerial and technical characteristics built into the system early on. One of the first of these was to operate the service primarily as a network of interconnected lines, rather than as a series of point-to-point connections, so that the value of each subscriber's service increased as more subscribers were connected to the network. Thus the basis of the mass market was laid.

Another early managerial decision was to establish the "R&D" facility that has evolved into the Bell Telephone Laboratories. By this move the Bell System recognized the importance of technology in the development of the (then rudimentary) system and laid the foundation for the steady rise in productivity and the decline in cost.

A closely related decision was to provide complete end-to-end service rather than sell the terminal equipment to the subscriber, and to assume full system-wide responsibility for the maintenance of service and the pace of technological change in service according to quality standards of the time. Whatever retrospective questions are raised in respect of this decision, at the time it was made and for many decades thereafter it ensured the uniformity and integrity of the technological and performance standards.

It is something of a paradox that while these decisions helped to shape the monopoly form of the system, they also endowed it with economic performance characteristics in essential respects indistinguishable from those of a dynamic competitive industry. Its network form enabled it to operate under conditions of decreasing cost not only locally but on a national scale. At the same time the increased utility of the service to all subscribers as the network grew, combined with declining real and relative prices,¹ have enabled the system to approach universality of coverage of its potential market. The rapid and steady technological advance, by means of which (unlike the telegraph and

¹ We have used "real prices" to mean prices in relation to personal incomes (e.g., in terms of hourly wages: How many hours would an average wage earner have to work to earn the price of his monthly telephone services?). We have used "relative prices" to mean the change over a specified time in the price of a good or service relative to the average change in the general price level over the same time.

the railroads) it outpaced potential competitors, was also the means by which it achieved lower costs for an improving product. The exclusive ownership of all equipment in the system permitted flexibility in average pricing, under regulation, to accommodate to the elasticities of the various segments of demand and to satisfy social and equity objectives acceptable to regulators, the consuming public, and the industry. The equity ownership has been very widespread, and the profit rates stable and modest by all reasonable standards.

The Record of Performance

To test the proposition that the telephone system conforms in essential respects to the model of a competitive industry, we have examined its record over time. With respect to such performance characteristics as market penetration, price behavior, productivity increase, employment stability, and profitability, its record compares very favorably with those of a representative selection of manufacturing and nonmanufacturing industries operating under a variety of circumstances.

The steady expansion of the telephone system suggests that the investment, production, and pricing behavior of this monopoly has been directed toward increasing "output" to supply a demand which is continuously expanding at declining relative and real prices. Of course, the profit-maximizing behavior of the textbook monopolist is constrained in any event by the regulation of rate of return on investment. The practices followed by the system have been directed, therefore, toward higher output. Revenues have grown with the expanding market, while declining prices have provided the stimulus to the market.

These relationships are shown in table 1. The extraordinary fact is that an industry which was by no means in its infancy in 1940 (more than half of the telephones were already dial phones) increased its "plant" (the depreciated value of the physical base of its operations) *nearly seventeen fold* in the 32 years, 1940-72. (Capital assets of all U.S. corporations increased about 7 times in the same period.) Operating revenues increased nearly 18 times. The number of telephones in service increased 6 times; the percent of households with telephones increased from under 40 to over 90 percent of all households. "Conversations" increased 5 times; long distance, nearly 10 times.² While per capital disposable income in the United States increased six-fold and the general price level rose at a rate of about 3½ percent a year, the price of local telephone service increased only about half as fast as prices in general, and long distance charges actually declined.³

TABLE 1.—SOME PARAMETERS OF THE TELEPHONE SYSTEM IN THREE PERIODS, 1940-73: (1) WAR AND POSTWAR 1940-53; (2) STABILITY, 1953-67; (3) INFLATION, 1967-73

Parameters	1940	1953	1967	1973
		(In millions)		
Net telephone plant.....	\$3,387	\$9,597	\$32,296	\$58,356
Total operating revenues.....	\$1,174	\$4,417	\$13,009	\$23,510
Bell telephones in service.....	18.3	43.0	86.8	113.9
Telephone conversations.....	26,249	50,770	101,167	142,789
Local.....	25,341	48,685	95,848	113,275
Long distance.....	908	2,085	5,319	9,514
U.S. households with telephone service (percent).....	36.9	68.0	87.2	93.5
		Index (1940=100)		
Average price of service:				
Local.....	100	138.7	149.5	187.8
Intrastate toll.....	100	122.5	116.6	144.8
Interstate toll.....	100	83.4	75.7	77.7
Consumer Price Index, all items.....	100	190.7	238.1	316.9

Sources: A.T. & T., except CPI—U.S. Department of Labor.

² Contrast this with the record of the Postal Service which, even with heavy subsidies, has about tripled its volume since 1940 and is now growing at less than 3 percent a year, with constantly rising rates.

³ The price index components were furnished by AT&T. The Consumer Price Index component for residential telephone service coincides closely with the AT&T index for local service.

In great part, these developments have been made possible by a steady development and upgrading of technology. The Bell Laboratories, as an integral part of the Bell System, have been sensitive to both the needs and the potential of the Bell System for assimilating technology to its network. On its part, the Bell System, under regulatory prescription of depreciation rates and regulatory review of investment levels, has phased in new technology to balance the rate of obsolescence of serviceable equipment with opportunities presented by new technology to achieve new economies and to expand and improve its service.⁴ The prevailing rates of introduction of new technology through investment in capital equipment (currently at the rate of \$10 billion annually) has resulted in tripling the investment per main telephone and increasing the investment per employee more than five-fold. Largely as a result of this, output per employee has risen more than twice as fast in the Bell System as in the economy generally, and the number of Bell employees per 10,000 telephones served has fallen to less than half what it was 30 years ago.

The growth of the market for the Bell System has been greatly stimulated by the decline in relative and real prices, as shown in table 2. Compared to the increase in the general price level (as measured by the GNP implicit price deflator, private sector), increases in telephone rates have been small. Even the price of local telephone service, which has risen more than toll services, has risen only about one-third as fast as the inflation since 1940. Prices of toll services have risen very moderately, and interstate service is actually cheaper by a considerable margin now than it was 30 years ago. The efficiencies resulting from rapid and sustained technological improvements have flowed through to the benefit of users in this regulated industry, just as it presumably does in an industry characterized by competitive conditions.

TABLE 2.—CHANGES IN ACTUAL, RELATIVE, AND REAL PRICES OF TELEPHONE SERVICES IN THREE PERIODS
1940-73 (1) WAR AND POSTWAR, 1940-53; (2) STABILITY, 1953-67; (3) INFLATION, 1967-73

Item	Percent change			
	1940-73	1940-53	1953-67	1967-73
Telephone charges—composite.....	+41.2	+19.5	+0.3	+17.8
Local services.....	+87.8	+38.7	+7.8	+25.6
Intrastate toll services.....	+44.8	+22.5	-4.8	+24.1
Interstate toll service.....	-22.3	-16.6	-9.2	+2.6
CPI—residential telephone.....	+81.4	+50.5	+5.5	+16.5
CPI—all items.....	+216.9	+91.0	+24.8	+33.1
GNP deflator—private economy.....	+229.5	+100.6	+28.0	+28.3
Per capita disposable income.....	+598.4	+176.3	+73.7	+52.6
Average weekly earnings.....	1+519.8	1+182.3	2+60.1	2+41.8
Hours of work of average worker to pay telephone bill.....	(2)	(2)	(3)	4-16.1

¹ Workers in manufacturing only.

² Workers in private nonagricultural employment.

³ Not available.

⁴ 1966-71.

Source: U.S. Department of Commerce and Department of Labor; A.T. & T.

Prices of telephone service, measured in relation to users' incomes, have declined throughout the postwar period in the face of fivefold increases in per capita earnings and incomes. Telephone service to the factory worker earning \$170 a week is not the luxury it was to his parents making \$50 a week 25 years ago. As a "superior good," that is, a product of which consumers demand more as their incomes rise, telephone service has become almost universal in its use, especially because of the relatively slow increase in rates. The Department of Commerce estimates that in 1971 the average U.S. worker could buy a standard package of telephone service for the entire year with the earnings of only 26 hours of work—about one-third fewer than in 1960. In no other country could this service be bought at so low a real price, and in only three other countries—Canada, Sweden, and Switzerland—could it be bought for

⁴ Would an imagined competitive situation have resulted in a faster phasing in? Perhaps; but at what price to users in higher depreciation costs? The composite depreciation rate is about 5.2 percent of existing plant; depreciation charges in 1973 were somewhat in excess of \$3 billion, or about 14 percent of operating revenues.

less than 40 hours' earnings. In France and Japan it cost 175 hours or more. (Incidentally, of all the 15 developed countries compared, only the United States and Canada had privately owned and operated systems.)

The continuous and rapid growth of the market—we have calculated it at about 7½ percent a year for the last 25 years—has been so strong that it has exceeded even the far-above-average growth of productivity in the industry, with the result that employment in 1972 was about half again as great as in 1947. The technological development emanating from the Bell Laboratories and embodied in the high rate of new investment has resulted in a compound annual rate of increase in output per man-hour of about 6.3 percent for the past 20 years—over twice the average of the U.S. private nonfarm economy. The growth in Bell System employment was about the same as the growth in the nation's labor force: that is, the telephone industry was able to take up "its share" of the growing labor force, notwithstanding the extraordinary rate of productivity increase. The employment increase fluctuated, reflecting variations of the business cycle, which affects the telephone industry as it does many others. Declines in employment occurred in 1949, 1954, 1958–59, and 1961–62, reflecting mainly adjustment of investment to the business cycle, though the total output of services has increased every year since the end of World War II, as has output per employee. (See table 3.)

How does this record of the telephone industry compare with the performance of other industries typical of various modes of industrial organization in various sectors of the U.S. economy?

For such comparisons we have turned to a number of industries, old and new; manufacturing and nonmanufacturing; more or less competitive; unregulated and regulated. This is in no sense a "sample" of the U.S. economy; rather, it is a selection of very diverse industries for which reasonably comparable data are available as a basis of comparisons that may be instructive.

The data we sought were those dealing with rates of change in output, employment, output per man-hour, prices, and average rates of return on equity capital in the post-World War II era. These have not been uniformly available. The data are not in all cases exactly comparable; definitions, coverage, and time periods differ somewhat from source to source.⁵ However, only industries which could reasonably be compared have been included. This constraint precluded sampling; however, the industries were selected without preconceptions except as to diversity.

TABLE 3.—EMPLOYMENT AND PRODUCTIVITY IN THE TELEPHONE INDUSTRY IN THREE PERIODS, 1940–73 (1) WAR AND POSTWAR, 1940–53; (2) STABILITY, 1953–67; (3) INFLATION, 1967–73

Item	1940	1953	1967	1973
Employment—Bell System, Western Electric, & Bell Laboratories	323,701	702,822	841,241	1,022,608
Employment—Bell System	275,317	587,839	656,313	798,934
Rate of increase (percent)		6.0	0.8	3.3
Compensation per employee—Bell System ¹	\$1,997	\$4,237	\$8,231	\$13,891
Rate of increase (percent)		6.0	4.8	9.1
Total output ² (1967=100)	(3)	33.0	100.0	146.9
Output per man-hour ² (1967=100)	(3)	38.5	100.0	123.2
Rate of increase (percent)		—	7.1	3.6
Employees per 10,000 telephones, Bell System	(3)	142.15	78.35	72.41
Average annual rate of increase (percent)		—	-4.1	-1.3

¹ Including employee benefit expense, currently equivalent to about 23 percent of payroll.

² Bureau of Labor Statistics, Monthly Labor Review, November 1973, p. 3.

³ Not available.

⁴ 1972 (estimated).

Sources: A.T. & T.; U.S. Department of Labor.

⁵ The output, employment, and output per man-hour data, all from the Bureau of Labor Statistics, are consistent from industry to industry, though not always for the same years; but the data on price changes and rates of return do not in all cases cover the same industry classifications or the same component firms.

TABLE 4.—SOME MEASURES OF INDUSTRY PERFORMANCE, 1947-71

[In percent]

	Average annual rate of change, 1947-71				Average rate of return on equity
	Output	Employment	Output per man-hour	Prices	
Total U.S. private economy.....	3.9	1.2	3.2	2.4	(1)
Telephone.....	7.4	1.6	5.7	1.3	8.49
Air Transportation.....	13.9	5.7	7.7	1.4	8.87
Radio and TV receivers manufacturing...	10.2	3.5	6.6	-1.2	(1)
Gas and electric utilities.....	7.8	0.9	6.9	2.7/1.0	9.25
Motor vehicles.....	6.1	2.2	3.7	2.5	15.33
Pulp, paper, and allied.....	4.6	0.8	3.9	1.8	11.3
Glass containers.....	3.8	2.2	1.7	3.9	12.59
Canning and preserving.....	3.8	0.3	3.3	1.1	7.3
Petroleum refining.....	3.7	-1.9	5.8	1.5	10.91
Cement.....	2.6	-1.7	4.6	3.2	12.77
Iron and steel.....	1.4	-0.4	1.7	4.2	8.6
Railroad transportation.....	0.5	-4.1	5.2	(1)	3.44
Coal mining.....	-0.4	-6.2	6.2	4.1	8.54

¹ Not available.

Source: Bureau of Labor Statistics (output, employment, output per man-hour, prices), FTC and industry sources (rates of return), A.T. & T., and miscellaneous trade sources.

The range of performance by each criterion is very wide (table 4). The industries have been arrayed for comparison in descending order of rate of growth of output. Old industries like railroads and coal mining combine stable (no growth) output with above-average productivity gains, and consequently experienced large absolute declines in employment, of the order of 4 to 6 percent a year. Dynamic younger industries, like air transport and the manufacture of radio and television receivers, recorded output growth rates upwards of 10 percent a year and sharply rising employment, even in the face of productivity gains of 6 or 7 percent. These can be compared to "average" increases of about 3.8 percent in output, about 1.5 percent in employment, and about 3 percent in productivity for the private economy as a whole.

In this analysis we have used as a measure of productivity output per man-hour, often referred to as "labor productivity," a common and convenient measure regularly compiled by the Government for many industries on a comparable basis. But, of course, increases in output per man-hour are the result not only of the quality and performance of the work force but also of the amount and quality of the capital equipment with which it works and of the effectiveness of management in organizing and directing the use of both labor and capital. It is also possible to measure separately the output per unit of capital. A commonly used measure combines labor productivity and capital productivity in a measure sometimes referred to as "total factor productivity" which subsumes in these two factors of production the effect of the externalities of the society as a whole, such as the quality of education, the state of science and technology, the state of the market which determines the organization of production and the division of labor, etc. Time-to-time changes in total factor productivity are measures of increases (or decreases) in the efficiency with which the factors of production are employed: the index of total factor productivity indicates by how much the output in a given year is more (or less) than it would have been if the efficiency of the factors of production required for that output had been the same as they were in some earlier year used as a reference base. Thus, for the private domestic nonfarm economy, the index of total factor productivity in 1966 (the latest year for which the calculation is available) was 125.4 (1958=100).

TABLE 5.—TOTAL FACTOR PRODUCTIVITY FOR SELECTED INDUSTRIES, AVERAGE ANNUAL PERCENTAGE RATES OF CHANGE, 1948-66

Industry	Percent	Industry	Percent
Private domestic business economy.....	2.5	Paper.....	2.5
Communications.....	3.8	Stone, clay, glass products.....	2.4
Telephone and telegraph.....	4.1	Food manufacturing.....	3.0
Air transportation.....	8.0	Petroleum refining.....	3.0
Electrical manufacturing.....	3.7	Primary metals.....	1.6
Electric and gas utilities.....	4.9	Rail transportation.....	5.2
Transportation equipment.....	3.2	Coal mining.....	5.2

Source: John W. Kendrick, "Postwar Productivity Trends in the United States, 1948-69." National Bureau of Economic Research, New York, 1973, pp. 78-79.

We have compared total factor productivity of the combined telephone and telegraph industry (mostly telephone, of course) with a list of industries somewhat similar to those in table 4 (though more aggregated) (see table 5). By this measure, productivity in telecommunications about doubled between 1948 and 1966 (the last published date), a rate of increase nearly two-thirds more than the increase in the nonfarm economy as a whole and significantly more than most manufacturing industries. While output per unit of labor rose very rapidly because of the improved capital-intensive technology, output per unit of capital rose only modestly because of widespread substitution of capital for labor in the production of telecommunications services. (The same is true, to a lesser extent, of the private nonfarm economy as a whole.) Thus, the very great increases in total output of telecommunications were accomplished with relatively small increases in their work force, but they required massive infusions of capital. In this, telecommunications resembled other capital-intensive industries, like petroleum refining, air transport, and railroads.

In short, no single mode of behavior characterizes the "competitive" sectors of the economy, that is, the sectors not occupied by "natural monopolies." Each behaves according to its products, markets, technology, capital and labor requirements, industrial organization, management, and other institutional characteristics. These factors seem to weigh more heavily in industry performance than does the degree of competition.

For ease of comparison, we have ranked the 13 industries shown in table 4 by each of the performance measures in turn, to place the telephone system in relation to the national averages and to other industries (table 6). In rate of expansion of output, the telephone system is outpaced only by air transport, radio and TV manufactures (both much younger industries, most of whose markets have developed since World War II) and energy utilities (who have not had to cultivate their market themselves since their demand is mainly generated by the makers and sellers of energy-using equipment). Telephone service grew nearly twice as fast as the total private economy. For a century-old industry, it is an impressive performance.

TABLE 6.—*Ranking of Selected Industries*

[In descending order]

RATE OF OUTPUT GROWTH

Air Transportation
Radio & TV Receiver
Gas and Electric Utilities

Telephone
Motor Vehicles
Pulp & Paper

U.S. AVERAGE

Glass Containers
Canning & Preserving
Petroleum Refining
Cement

Iron and Steel
Railroads
Coal

TABLE 6.—*Ranking of Selected Industries—Cont.*

[In descending order]

RATE OF EMPLOYMENT GROWTH

Air Transportation
Radio & TV Receiver
Glass Containers

Motor Vehicles
Telephone

U.S. AVERAGE

Gas & Electric Utilities
Pulp & Paper
Canning & Preserving
Iron & Steel

Cement
Petroleum Refining
Railroads
Coal

RATE OF GROWTH IN OUTPUT PER MAN-HOUR

Air Transportation
Radio & TV Receivers
Gas & Electric
Coal
Petroleum

Telephone
Railroads
Cement
Pulp & Paper
Motor Vehicles
Canning & Preserving

U.S. AVERAGE

Iron & Steel

Glass Containers

RATE OF PRICE CHANGE

Iron & Steel
Coal
Glass Containers

Cement
Gas
Motor Vehicles

U.S. AVERAGE

Pulp and Paper
Telephone
Petroleum Refining
Air Transport

Canning & Preserving
Electric Power
Radio & TV Receivers

RATE OF RETURN

Motor Vehicles
Cement
Paper and Pulp
Glass Containers
Petroleum Refining
Electric Power

Air Transport
Iron & Steel
Coal
Telephone
Canning & Preserving
Railroads

In employment, the telephone system grew a little faster than average and faster than most high-productivity industries.

The price performance of the telephone system has been good—better than the average for the private economy and better than two-thirds of the industries shown for comparison. Partly because of regulation, no doubt, but partly because of efficiencies, the telephone system (by our estimate of a composite deflator of local and toll revenues) has performed better than such “competitive” industries as paper and pulp, steel, and coal, and better also than such concentrated industries as motor vehicles, cement, and petroleum.

Obviously, these results are determined in part by the industries used for comparison. Different industries might have yielded somewhat different comparisons, but the industries were not preselected to predetermine the results. Industries were used for which productivity, output, and employment data were available on a consistent basis (mostly from the Bureau of Labor Statistics) and, in most instances, for which price and profits data were available also. By any standard, the telephone system's performance compares very favorably. It has merchandised and marketed effectively to expand its traditional market near to universal use. It has developed its own technology (which, incidentally, has spilled over into other industries: in significant part, the outstanding performance of the electronics industries traces to the transistor, which was born in Bell Laboratories). It has introduced new

technology and created new markets through new investment at a pace which has resulted in rising productivity, rising employment, and declining relative prices. The rate of return on its equity capital has been moderate—in the low range of the industries examined (except railroads).

The conclusion is inescapable that the telephone industry has performed well by whatever test we apply. In all respects its performance has been better than average. Few competitive industries have done as well. However we may incline toward competition as the theoretical norm of behavior in an enterprise economy, we must acknowledge that the telephone industry as a natural monopoly under public regulation has yielded rather spectacular social and economic benefits. Have we any reason except our *a priori* predilections, or any evidence, to believe that the public would be better served by picking the industry apart or forcing it into a Procrustean mold of competition?

In essence, the telephone industry has outperformed competitive industry in those very attributes competition is supposed to enhance—in pricing performance, in innovation, in reliability and quality of service and in assuring ample supply to meet demand.

III. ECONOMIC ISSUES OF COMPETITION AND MONOPOLY

The Boundaries of Natural Monopoly

By definition, competition is uneconomic in the natural monopoly sectors of the economy, including the natural monopoly of the telephone system. These are sectors which operate under conditions such that in any service area multiple suppliers would necessarily operate at higher costs than one supplier. So much is beyond dispute. Degrees of essentiality and quality of service for the public convenience and necessity may be considered in judging monopoly characteristics. For our present purposes the problem is to define the natural monopoly *segment* of the telephone industry and explore its boundaries.

The switched voice network is certainly the core of the natural monopoly, in the sense that it can increase its output of services, and indeed, its capacity, at lower than average cost and at lower cost than any competitor. In varying degrees, the same can be said of other elements of the system. Decades of specialization in the technology of telecommunications have generated in the Bell Laboratories a degree of efficiency in research and development that would require expensive and extensive experience to replicate or match. This is not to say that significant discoveries or innovations could not or do not originate elsewhere, in the United States or abroad. But the efficiencies to the telephone system of institutionalized, systematic research are unique to the integral relationship of the Bell Laboratories to the operating network, where needs and responses and feedbacks all serve to provide a highly technical and efficient service.

The link between the technology and the operations of the system is the equipment, and it is here that the borderlines between the public interest in undivided responsibility for technical and operation performance and the public interest in competition are most difficult to draw. It would be possible to hypothesize, starting from scratch, a system that was held together by performance standards and specifications based on the available and developing technology, differentiating development from manufacture, and manufacture from installation, maintenance, and operation.

But that is not the way this system evolved or the way it works. Nor is it particularly fruitful to conjecture whether, in the absence of the integral relationships of research, manufacture, and operation, it would have been possible to produce a network employing continually advancing technologies embodied in components of predictable compatibility and reliability. The quality control of the equipment, in fact, is the means of controlling the quality of the system itself. Thus, the entire telephone industry is under the discipline of the system requirements. Variations in product or service which in other industries would be the basis of competitive marketability simply must meet the requirements of compatibility and performance.

If we had an underdeveloped or poorly functioning telephone system which required competition to prod it to satisfactory standards of technology and service, we might be justified in accepting the risks inherent in competition, for the sake of improving the system. But this is hardly the case. The efforts to introduce competition in the telephone industry rest on one of two premises:

either on the philosophic or ideological commitment to competition as the economic and legal norm for private enterprise in the United States, or on a finding, in fact, that competition is necessary because without it the country cannot realize the full benefits of communications technology at the lowest economic cost. (There is also, of course, the interest of the would-be competitors who see targets of opportunity in this huge and complex market, but that interest, however understandable it may be, is not *per se* synonymous with the public interest.)

There is, indeed, a strong leaning in favor of competitive behavior as the normal mode of business in this country. However, it has long been recognized that in the case of public utilities we look to regulation as the arbiter of where the public interest lies.

Let me now turn to the second premise, to ask whether, in fact, competition is necessary in certain segments of telecommunications in order to realize the public interest.

The Theoretical Rationale of Competition in the Telephone Industry

Since the 1960's, we have seen a burst of technological development in the fields of microwave communications, electronic data processing, solid-state engineering, computers, and space technology including communications satellites. Some of these advances are clearly rooted in the broad program of first-rate research, development and engineering traditionally maintained by the Bell System. Others have been derived from the technology developed to support the effort of this country during and after World War II or from the space program. They all have increased the opportunity for innovation in the field of communications equipment and services. Accompanying this innovative opportunity has been a rush of firms—some of which by their nature have lacked previous ties with the telecommunications industry—to penetrate segments of the market served by the Bell System.

The rapid development of communications technology offers opportunities for a proliferation of innovative sources other than the Bell System, and this in turn has raised the question of competition in selected portions of the telephone industry. The practice of value-of-service pricing and its attendant considerations of social benefit and equity so long followed by regulatory agencies for rate-making for natural monopolies are being confronted with an insistent argument for greater consideration of the possible benefits of competition and diversity. In this context of rapid technological development resides the important economic question of whether the public interest is better served by enlarging the scope of competitive activity. As a consequence, in recent years we have seen a number of legal challenges to the position of the Bell System in its integrated operation as supplier of telecommunications service and supplier of equipment.

This technological and regulatory climate has attracted potential entrants prepared to take risks within the framework of regulatory protection. Penetration has occurred in the provision of interconnecting terminal devices and systems. Simultaneously, technical development in the arts of microwave relay, satellites, and computer hardware have invited ventures by new specialized carriers attempting to serve specialized markets in message and data communication.

Though these invasions of regulated competition have continued to erode the monopoly position of the various telephone companies and the Bell System, it remains to be demonstrated that the public interest has been better served by this process.

Conditions and Constraints on Competition

Spokesmen for AT&T have emphasized the well-known principle of "end-to-end" technical responsibility which the Bell System regards as essential for reliable high-quality service. It is not a responsibility to be dismissed lightly: obviously the functioning or malfunctioning of any component feeds back directly into the system of which it is a part. Since function depends on research, development, design, manufacture, installation, maintenance, and operation (including not only communications but also data flow, accounting and billing), end-to-end responsibility is no theoretical invention but a fact of

life; it is a responsibility that somebody has to bear. The reality of this proposition applies even in those circumstances in which competition is hypothesized to be admissible. Even as they offer their equipment or services, competitors demand interconnection with the Bell System and rely on it as a condition for their success. Without Bell to connect them to the larger system and as the carrier of last resort, who could confidently use their equipment and services? And who is to bear the very real costs of this ultimate responsibility, which costs are not included in the structure of service and rates of the would-be competitors?

Interconnection being a very practical matter, how can the necessary compatibilities be ensured? Physically the problem can be dealt with either by interposing devices to shield the switched network from the "harms" of malfunction, or by "certification"—an enforceable and enforced code of specification defining the certified performance characteristics for compatibility. Who is to decide and enforce the specifications for performance that is both compatible and of satisfactory quality, and the tolerance limits for reliable interconnection and function? Where the equipment and services grow out of the vertically integrated process, the question answers itself. Where there is an admixture of competitively provided equipment and services, there are technical as well as economic and social issues, involving costs which must ultimately devolve on the users of the systems, on customers of the Bell System or of its competitors. Who will allocate the increased costs?

An economist analyzing the consequences of competition in the sale, installation, and maintenance of customer-owned equipment, or in the provision of certain transmission services, must take these technical conditions and constraints into careful consideration. The effect of the Federal Communications Commission's Carterfone decision has been to allow unregulated suppliers of customer-owned devices designed to interconnect with public telephone systems to compete with regulated telephone companies in the sale and installation of such devices. Since the function of these devices is generally to provide system interconnection on a two-way basis—that is, to receive signals from the system as well as to inject signals into the system—these devices must satisfy strict requirements of technical compatibility with the network in order to preclude harm to system users, telephone company service employees, service quality, and the switched network itself. The telephone companies have historically exercised responsibility for service and equipment quality. While the regulatory process has clearly defined carrier responsibility for performance, the suppliers and users of customer-owned equipment are presently not subject to an analogously defined responsibility.

The technical and regulatory conditions and constraints, in turn, raise a variety of economic and social issues. Since technical compatibility of these devices and of the network requires a safeguard of some form or another, one basic economic question relates to who should bear the cost of such a safeguard.

If the safeguard takes the form of an electrical protective "connecting arrangement," should the manufacture, installation, and maintenance of the arrangement be performed by the carrier or by some independent company? And if, on the one hand, the interconnection is construed to benefit solely the user of the device, should only he bear the cost so that it becomes, in effect, part of the cost of the competitive device? Or if, on the other hand, the benefits of competition and of high-quality performance are judged to accrue to the public at large, should the cost of the safeguard be borne by the public? If the safeguard takes the form of certification, similar questions of cost arise, along with questions of practicability and effectiveness.

As to the certification process, there is yet no experience. It has been said to be technically feasible, but it would require, at the least, an elaborate subsystem of specifications and the testing of design and materials, and quality control of manufacture, installation and maintenance. These procedures would apply to any component, attachment, or interface to which the tests of compatibility and performance applied. It would apply to products marketed in competition with the Bell System (or, for that matter, competitively sold to it). It could apply to many products from many sources, here and abroad. Since the market is large, it might be expected to attract many competitors (in fact, since Carterfone, it has). Since Western Electric's cost and price are low, reflecting economies of scale as well as efficiency, there would always be the

temptation for some to compete in price at the expense of quality (as has happened in electronic calculators, for example), or to compete in quality at the expense of compatibility. The operation and policing of a certification process would be formidable and expensive, and the costs would fall on the users of the present system or the users of competing products or the taxpayers (if the certification process was government operated); most probably the costs would fall on all three.

Interconnection raises another set of economic issues. It is possible that some competitive firms have provided or will provide variations in service and interconnecting devices only on the assumption that the telephone companies would bear continuing responsibility to provide the telephone network backup facilities sufficient both for Bell customers and for the customers of the competitors. To the extent that they rely in this way upon the Bell network, these competitive firms are supplying an incomplete or subsidized service to their customers (subsidized by those users of Bell's equipment). The economic issue here is that the telephone companies must charge their customers for the cost of providing the additional backup capacity required by the customers of the competitive firms. Thus the former are subsidizing the backup costs of the latter. Bell customers would also have to bear the costs of additional maintenance and diminished service quality if the interconnected equipment were technically incompatible.

These unresolved issues and questions persist because there has been neither sufficient economic investigation of the impact of competitive service and equipment upon the public interest, nor a definition of responsibility for system integrity and continuity of system maintenance under circumstances of continuing interconnection.

Conclusion

From the economic view, the overriding criterion is efficiency: the ability to satisfy the market for the quantity and quality of telecommunications service at the lowest cost to society. "Lowest cost" implies that the services be provided with the least use of scarce national resources, material and human, in amounts and proportions which at any given time approximate the lowest money cost. Consideration of cost to society implies that we take account not only of the costs of resources directly employed by the telephone industry but of external costs to the society generated by the industry but not borne by it or by its users directly. (Of the latter there are few, in this case, since the industry does not pollute water, air, or land, nor does it, of itself, require external infrastructure or other public costs. To the contrary, it is, itself, an important element of social and economic infrastructure and generates very large external economies or benefits for every other form of private and public economic activity.)

My analysis leads me to conclude that by this standard the telephone industry is one of our most efficient. On the record, it has cultivated and supplied a growing demand, with service which on the whole has been of continuously improving quality, at declining relative and real cost, over all. There are few industries, either competitive or regulated, of which as much can be said.

Regulation has succeeded in keeping the industry's prices low, overall, in relation to cost, though in accordance with regulatory policy the relationship is not uniform among all services. Value-of-service pricing and price averaging has led to low margins of price over cost in some services and in some areas and high in others. The differential pricing, and the allocation of costs among complementary services, has generally favored household users over commercial and other specialized users, and shielded users of low density services from the full costs of the services they use. These differentiations have been urged and approved by regulatory agencies; in general they have served the social (in some respects, political) criteria of state and Federal regulation.

By the same token, these differentiations have left some relatively high-margin services as exposed targets for competitive offerings by competitors prepared to offer service to some high-margin sector or segment of the whole market at a lower price because they can count on the Bell System to serve the high-cost, low-margin sectors. It is only accurate, not pejorative, to call this "cream-skimming." (Why would they choose skimmed milk as their target for competition when the rate structure makes the cream so accessible?)

Nevertheless, the implications are clear. Assuming that regulation has been effective in holding over-all rate of return of the telephone industry to levels consistent with its need to raise continuously large increments of capital, then revenue losses and shortfalls in bearing the total cost burden in some segment will require offsetting gains in others. If private-line users on dense, low-cost segments are to be served at lower prices, then they will have to be "de-averaged" from similar users on less dense, higher-cost segments.

Considering the long history of value-of-service pricing and price averaging in the industry and the web of interrelated rates that has resulted, it would take a long time to restructure rates to relate them more closely to the relevant costs, which would be the economist's theoretical ideal—though not necessarily the social ideal. Mr. de Butts has said these changes might take to the end of the century, and they would certainly entail obstacles and consequences which regulatory and legislative authorities would find socially or politically perverse. The telephone industry has already taken a first step in instituting its "high-low" rates, in effect a de-averaging of high and low density rates for certain long-distance services. But de-averaging itself is a complex and uncertain process; no one contemplates a separate rate for every individual service in relation to its individual cost. Some averaging will persist—probably a great deal; the question is how wide or how narrow the range of costs to be averaged in one schedule of rates.

Meanwhile, the cream remains a tempting target for skimming, and the competition will aim at high-margin, specialized services and equipment.⁷ It would be insupportable to contend that nowhere in this far-flung system was there opportunity for competition that would prove beneficial to the telephone industry and the public interest it serves. Neither would it be supportable to contend that it would be useful to admit competition *ad lib* in any segment of this highly integrated system that any competitor might choose to try to pick off. At the least, we might opt for somewhat more open opportunity for outsiders to compete with Western Electric in the design, manufacture, and sale of certain components and equipment to telephone companies, as long as they were able to meet tests of precision in compatibility and performance, to demonstrate whether, in fact, innovation of superiority in design or manufacture or reduction of cost would result.

Perhaps, also, there might be some benefit to users in competitive development of data communications and other specialized communications. The issue of customer-owned equipment, as we have seen, is more complex, raising questions of compatibility, tested specifications, installation, and maintenance which have not been resolved, except perhaps theoretically, and which may prove impossible or uneconomic to resolve in practice.

Certainly any moves toward increased competition must be subject to two conditions. The first is that whatever services may be open to competition, the Bell System and other telephone companies must be allowed to compete freely by adjustment of services or rates, as long as they do not engage in predatory competition or noncompensatory pricing. The second condition is that competition should not be imposed in the regulated telephone system simply for the sake of competition, but only after careful consideration of the effects and side-effects on the regulated system and only after a finding that competition will result in a better telecommunications system, not merely a more segmented one.

As we have learned from the experience of the transportation sector, failure to adhere to these conditions can preclude the benefits of market competition. It would be ironic indeed if we found that by opening the system to such competition we had degraded the quality or increased the cost of service and shifted the rate structure to degrees that were socially or politically untenable; yet these are real possibilities.

⁷ We need to be clear, however, about what it is the new entrants in the specialized service market want. They are not asking to replace the constraints of regulation with free market competition, open to all comers, but rather that regulated monopoly be replaced by regulated competition. They are not asking to open the market but to divide it. This has become evident from their comments filed in FCC Docket No. 19919 (Bell's HI/Lo tariff).

EXHIBIT 2.—*Remarks by Bernard Strassburg, Chief, Common Carrier Bureau, FCC, Before the Seventh Annual Digitronics Users Association Conference and Seminars, New Orleans, La.*

October 16, 1972.

DOES REGULATION PROTECT THE USER?

The combined revolutions which have been taking place in communications and related technologies have posed a variety of problems and opportunities for the communications industry, communications users, and the regulator. I welcome this opportunity you have given me to take a break from the cares and concerns of the regulator for an examination of the effectiveness with which regulation has been responding to the challenges posed by these resolutions. I know that in doing so I offer myself as a target for your complaints and criticisms regarding the shortcomings of regulation in meeting your needs as communications users. But with Chairman Riordan and former FCC Commissioner Ken Cox sharing the program, you are entitled to a thorough accounting.

Like all other public and private institutions, regulation has its strengths and weaknesses, its successes and its shortcomings. But whether you score it higher on one side of the ledger than on the other, I know that you appreciate that the regulatory task is not an easy one. It is particularly difficult in the communications field where technologies and consumer requirements have been changing and growing at a most dynamic rate. The challenges presented the regulator by these phenomena are staggering ones and, at times, almost insuperable. They involve the task of integrating old technologies with such new technologies as broadband cable, computers, satellites, lasers and repeated breakthroughs in the more efficient use of the radio spectrum. They involve the task of channelling the inherent benefits of these advances to serve the public interest in the availability of expanded and efficient communications services on economic terms.

By and large, the regulator does not lack the will or commitment to the job. What he most often lacks are adequate resources and skills to approach the task in a timely, informed and effective manner. This is due in a large measure to the fact that regulation is too often treated as the ugly duckling in the brood of state and Federal bureaucracies when it comes to legislative action on regulatory budgets. This condition was meaningfully dramatized on a national scale only last December when the FCC dismissed a part of its rate investigation of the Bell System. We took the unprecedented action simply because we did not have the staffing required to deal with the matter. It was the Commission's view that because of the importance of the issues involved to the public and the Bell System, no investigation was preferable to one which would otherwise be a sterile ritualistic regulatory performance without meaningful or credible results. The Commission's action shocked the public and its representatives into an awareness of the regulatory plight. Substantial funds have now been made available, and the investigating staff is proceeding to do the job that our statutory charter of 1934 mandates should be done.

Equally important to a realistic assessment of the effectiveness of regulation in the area of communication is an understanding of the problems presented by the structure of industry. For the principal force in the industry is of course the Bell System which has been mainly responsible for this nation's preeminence in communications. However, built into the warp and woof of the Bell System is its historic corporate policy of maintaining a dominance in all elements of communications service. This policy was articulated in 1916 by its then president Theodore Vail who wrote:

"The telephone system to give perfect service must be one in which all parts recognize a common interest and a common subordination to the interests of all; in fact it must be 'One System', 'universal', 'intradependent', intra-communicative and operated in a common interest. Such is the Bell System."

The Bell System perpetuated this position of dominance by an amalgam of practices and policies which until recent years were accepted, if not endorsed, by most, if not all, regulatory agencies. These policies and practices foreclosed any form of competitive entry into the market for communications

service. They blocked the interconnection of customer-owned equipment to the telephone system. They restricted interconnection of non-common carrier systems with the telephone network. And they controlled the rate of technological advance and innovation through vertical integration of the telephone companies with Western Electric and Bell Laboratories.

These policies and practices perhaps were defensible and in the public interest in the Vail era of Plain Old Telephone Service; when the market for that service was predictable, steadily growing, and relatively homogeneous. Standardized service was the order of the day; economies of scale were demonstrably extensive; and new technologies were easily adapted by Bell to the established system. Within this industrial and technological context, the concept of the natural omnipresent monopoly found a ready and logical basis for acceptance by the public and the regulator.

The post-war revolutions in communications and information technologies have, as we all know, radically altered the makeup of the communications market. Those revolutions have produced a requirement for a diversity of services and facilities either unavailable from the established carriers or at charges which were too costly. The FCC's computer inquiry elicited many responses that amply supported the conclusions that additional sources of supply would greatly enhance and improve the nation's capability to satisfy modern day communications and information system needs.

In response, the FCC has made an earnest attempt to reshape traditional policies so as to better adapt industry structure to these changing conditions of supply and demand. By various policy actions, the FCC has sought to open up the communications environment to the technical and innovative capabilities that exist outside of the existing carrier establishment. These new policies, of course, tend to disturb the established order. They introduce the opportunity for competition in areas that have heretofore been the exclusive preserve of the monopoly. And the full extent of the economic and social benefits that will inure from these policies remain to be demonstrated by experience. Under these circumstances, it is not surprising that these policies and their implementation are born in an atmosphere of opposition and controversy for which the FCC serves as both the forum and the target.

Time does not permit me to go into all of the policy development of recent years. However, I want to say a few words about interconnection which currently poses one of the more complex and controversial issues of general concern.

Four years ago, the Commission condemned as unlawful the telephone industry's general prohibition against the subscriber's use of equipment not provided by the carrier. AT&T responded with revisions to its foreign attachment tariffs which established a large measure of customer freedom to purchase or lease equipment from non-carrier sources. The one principal restriction imposed by the new tariff related to customer equipment which was to be hard-wired to the switched telephone system. Interconnection in this case is permissible only when accomplished by means of a connecting arrangement and, as required, by a network control signalling device furnished at a charge only by the telephone company.

Whether these latter restrictions are reasonable or not has not been decided by the FCC. They have been accepted, at least temporarily, as necessary and realistic while we take a look at other possible alternatives. This is because of the concern—concurrent in by a National Academy of Sciences study—that uncontrolled hard wire interconnections could have adverse effects on the safety and functioning of the telephone network. At the same time, there is widespread dissatisfaction with the connecting arrangements imposed by the revised tariffs. Independent manufacturers and distributors argue that the arrangements are onerous, unnecessary and economically burdensome. They contend that they are placed at a competitive disadvantage with the telephone company and are at the mercy of the latter for timely installation of suitable connecting arrangements. The NAS study pointed to an alternative to such telephone company imposed arrangements, namely, a system of prescribed standards for customer owned and maintained equipment, including a program of enforced certification of such equipment as well as certified installation and maintenance.

For the past year or more, two FCC-created Advisory Committees have been wrestling with the formulation of standards and enforcement procedures.

The problems are many and difficult, so their progress, while steady, has been necessarily slow. A major hangup within the Committees has been in trying to agree on the specific nature and degree of harm to which the network would likely be exposed by interconnection—and from which the network must be protected by a system of standards and enforced certification. Of course, the degree of protection required will determine the cost effectiveness and viability of any such program. AT&T contends for standards and procedures that would give maximum safeguard against types of harm that many non-carriers regard as highly remote and more theoretical than real.

AT&T has been unable to come forward with adequate empirical data as supporting evidence of the types of harm it claims could occur from interconnection. Such evidence should be available inasmuch as unauthorized interconnection is not a recent phenomenon. Some industry sources estimate that illegal interconnections are running in the several millions. Nevertheless, we have very little documentation from AT&T as to either the performance or the number of illegal interconnects or their effects on the network and Bell has devised no program by which to obtain such data. Our concern is not only with the alleged number of illegal interconnects, but also with the growth rate of such installations.

It appears clear that only the telephone companies are in the most favorable position to gather this type of essential data. Despite the fact that the Commission has asked Bell and other carriers to provide us with these data, it has not yet been supplied. The Bell System should now undertake an objective survey to determine the extent of illegal interconnection and the incidence and character of actual as opposed to theoretical harm. Without such information it is difficult to assess the credibility of AT&T's claims with respect to actual or potential harm. If the potential impact of harm to the network is as central to the issue of liberalized interconnection as Bell contends, Bell is obligated to supply the necessary data or abandon its dogmatic position that interconnection requires standards and procedures of the utmost vigor. Or, to put it another way, if the carriers do not view this matter of sufficient importance to collect the necessary data, then certainly we can question the basis for the strong concerns they voice. Finally, let me stress that while we are earnestly concerned with protecting the network from harm, we must avoid the imposition of "worst-case" restraints and costs premised upon supported apprehension. Data of this type would also be of importance to the Federal-State Joint Board on Interconnection which has been recently created by the FCC to evaluate the recommendations of the Advisory Committees and others regarding the interconnection problem.

In citing the fact that there may be an available body of relevant evidence in the illicit interconnect market, I am not implying that the Commission condones that market. On the contrary, we share the general concern that uncontrolled hard-wire interconnection, if continued unchecked, would produce harm to the telephone system. Telephone subscribers have a duty to conform to the applicable tariff conditions until they are properly changed or run the risk of losing their service. This is so whether they regard the tariff as unnecessary, unfair or economically burdensome. The Commission has no obligation under the Act to provide resources to enable the carriers to enforce tariffs. Instead, the telephone companies have the prime obligation under the Communications Act to police and enforce compliance with their tariffs. Otherwise, they run the risk of being in violation of their statutory obligations and being exposed to penalties and forfeitures. It is our duty to impose such forfeitures upon the carriers when they fail to enforce their tariffs and to award damages upon complaint to persons suffering from such failure and to grant other forms of relief. This is particularly true if enforcement of a tariff provision is not even-handed enforcement and results in discrimination and preferences among customers. If it is impossible, impractical or undesirable for the carriers to administer their tariffs in an effective manner, then the validity of the tariffs is in question and revisions should be initiated.

We are also concerned with many advertisements of interconnect equipment such as automatic dialers, answering devices and telephone instruments that fall short of disclosing full information that the prospective purchasers should have. Some of these advertisements are silent with respect to the tariff requirement for rental of a telephone company connecting arrangement that

must accompany use of the equipment; others state that there are no such requirements and others are ambiguous and incomplete in this respect. Whether this is false or misleading advertising or an unfair trade practice in a legal sense is not within the purview of the Commission's authority or expertise. The matter has been brought to the attention of the Federal Trade Commission and, perhaps, more will have to be done in this direction.

I have addressed only one of many dimensions of the interconnect problem confronting the regulator. There are others of no less complexity involving the economic, jurisdictional and political implications of expanded interconnection. I hope, however, that I have given you some clearer insight into the complexities and challenges confronting the regulator in serving the public interest in the current technological and economic environment.

EXHIBIT 3.—Remarks of Bernard Strassburg Before 1974 Annual Convention of North American Telephone Association, Washington, D.C.

March 22, 1974

I appreciate this opportunity, in my capacity as a private citizen, to sound off some personal views on the interconnection issue. Although I am now essentially an observer of rather than an official participant in the interconnection struggles, somehow I feel just as much involved as I did before my retirement from Federal service.

I have always had a great deal of enthusiasm for spectator sports, but I derive much greater satisfaction from participating in a poker game—where I am personally involved and the stakes are for real. My participation in the interconnection saga has instinctively been something more than the passive, bemused spectator. The stakes are high and have great import—not only for you, the interconnect suppliers—but more importantly, for the public at large. For interconnection is making a most valued and needed contribution toward strengthening the total communications resource of this nation.

By now, all of you may have read the reports of FCC Chairman Wiley's speech of last week before the spring conference of the Electronics Industry Association. I am sure that you welcomed the thrust of his message. In my opinion it was important as a public affirmation by a key policy-making official that competition can have a significant and acceptable role to play in the national communications fabric.

I was heartened by his remarks for several reasons. It was not because I had any reason to doubt Chairman Wiley's commitment to the competitive principle, particularly as applied to the interconnect market. Nor did I feel that there was any need to be reassured that Mr. Wiley's fundamental views on the positive benefits and the role of competition in a regulated industry remain unaltered from what I knew of them before his ascendancy to the Chairmanship of the FCC. His talk turned me on for another reason.

The interconnection policies of the FCC, as you too well know, have been the subject of an almost continuous barrage of misrepresentations, old-wives tales, and other assaults. Constant efforts are being waged in a variety of forums and by all sorts of devices and spurious allegations to undermine and discredit those policies. In contrast, there has been too little and too infrequent response by responsible officials in the Federal establishment to counter those attacks. And at times, public official comment has a ring of grudging or tentative endorsement of policies which that officialdom itself, at one time or another has fashioned with ostensible conviction and confidence. As a result, there has been understandable public concern as to the viability of FCC competitive policies. This concern is, of course, not mitigated by the uncertainties which stem from the substantial changes in the make-up of the Commission since these policies were first adopted.

Hence, it was most encouraging and reassuring to have the benefit of Mr. Wiley's views on competition and its useful place in the structure of industry and regulation. I took particular note of his statement that if the public is to fully realize the benefits of competition that at least three caveats are in order. Although he applied these caveats to all forms of competition generally, I took note of these caveats in the context of the interconnection market.

In brief, he asserted that new entrants must offer the public something new or different, and not simply engage in duplication or siphoning of telco business; that there should be opportunity for competitive response by the established telcos to new entry, without cross subsidy nor predatory practices; and that if competition is to be real and not contrived we must expect that some will succeed and some will fail; but no one is entitled to an umbrella of protection to be provided by government policy. I believe I have done justice to summarizing the essence of Chairman Wiley's formulation of these caveats.

In my judgment and experience, the interconnect industry has demonstrably met the test of each of these caveats. The question is: whether and how the Bell System has been measuring up to these tests.

As to the interconnect industry, there is no question that it has brought to the public something "new and different" in Chairman Wiley's terms. The scope and variety of equipment and systems available to all classes of communications users have been vastly expanded and diversified compared to the limited choices to which they were confined only a few years ago. This is a tribute to the innovative and enterprising forces released by the FCC's interconnect policies in better serving the public convenience and necessity. Unquestionably, there has been some duplication and siphoning of telco business. But, why not, if that duplication and siphoning comes about as a result of your bringing to the market better, more efficient products and services, at lower cost. That your industry is not simply a parasitic market aberration is evident from its actual record of performance as well as the response that performance has stimulated in the telco segment of the industry itself.

Nor has your industry asked that the telcos be foreclosed from participation in any part of the interconnect market. Nor does the FCC's interconnect policies operate in any manner to restrict competitive response by the telephone companies. On the contrary, their competitive response has been markedly aggressive both in pricing and repricing their own equipment and systems as well as in the stepped-up introduction of new and improved product lines. In fact, there is widespread concern that the marketing counter-measures being taken by the telco, particularly in the pricing and tariffing department, are contrived to stifle or suppress a healthy competitive environment. While I am in no position to assess the validity of these concerns, the pricing action of the telcos certainly warrants more thorough regulatory scrutiny than they have been accorded—if the Commission's policy objectives of full and fair competition are to be meaningfully realized. Without more active regulatory oversight, particularly at the state level, there can be no certainty that the interconnect industry will not be victim of cross-subsidies or predatory practices. And without active and conscientious regulatory oversight, it could well be the result that it will be the independent interconnect supplier and not the telephone company who is foreclosed from the type of unrestricted market participation contemplated by the Commission's policies.

With respect to the great American competitive tradition alluded to by Mr. Wiley that some may succeed while others fail, and that no one is entitled to any protective umbrella, the interconnect industry is painfully aware of this truism. In its relatively short life, the interconnect industry has already experienced its share of business failures, mergers, acquisitions and liquidations. You pass Chairman Wiley's test in this respect with flying colors—although at half-mast. Clearly, no entrepreneur in any line of endeavor is entitled to be insulated from the risk or failure. He is, however, entitled to expect that his success or failure will be determined by the judgment of the competitive market place and the normal operation of market forces. His success or failure should not depend upon the policies or practices of any one of his competitors who happens to occupy a strategically advantageous position to orchestrate the behavior of those market forces.

If there is any element of economic protectionism present in the interconnect market, it is a protectionism sight and enjoyed by the telephone company. Let me amplify this.

The Bell System controls the availability, efficiency and price of the connecting arrangements which, under Bell System tariffs, apply to your customers but not Bell's. These arrangements are ostensibly necessary and have been accepted as such by the FCC as reasonably required to safeguard the network against the harmful effects of deleterious customer attachments.

Protection in this context cannot be faulted although I am aware of the sentiments of many of your members that it is a needless and onerous burden. Until a better method of protecting the network is devised, we are going to have to live with the protective provisions of the tariffs as they are now formulated.

But it cannot be denied that the tariffs operate to give the telephone companies a distinct competitive advantage. So long as they are free to supply their equipment without charging their customers for a separate interconnect arrangement, from a marketing standpoint the Bell System enjoys a singular form of protectionism. The degree of protectionism is heightened by the fact that all of its competitors are compelled to depend upon Bell to supply the connecting arrangements without which they cannot complete a sale. To say the least, this is a most unique competitive situation which would not be tolerated in any other competitive industry market.

The Bell System is getting by with this ambiguous and privileged status simply by being permitted to parade under the protective banner, or umbrella if you will, of the regulated or natural monopoly. The interconnect market does not belong under that banner and Bell should either get out of that market or give up that banner of protectionism as it applies to interconnection. In this case, the regulatory processes are clearly inadequate and ineffective in preventing Bell from using its multifaceted and ambiguous status in a manner which produces anti-competitive results.

In my judgment, you must look elsewhere than to regulation for a solution to this problem. The limitations inherent in regulation make it totally unsuited for preventing abuses and inequities in this field. I am aware that the telephone industry and some regulators would solve the problem by giving the total interconnect market the monopoly treatment. They would reverse *Carterfone* and would return to Bell absolute control over the supply and use of customer equipment. This solution will never come to pass and it is tragic that so much energy and effort is being diverted by regulators to the wasteful pursuit of this totally unrealistic solution.

Let me suggest a different approach to the problem.

I would urge that it is time to explore a possible restructuring of the interconnect industry, and I stress here that I include Bell as part of that industry. By this restructuring, all suppliers of customer equipment and systems would be subject to the same rules and market forces of supply and demand. Thus, the Bell System, if it is to participate fairly for interconnect business, should do so through a separate subsidiary or subsidiaries. Those entities would merchandise, sell and service customer equipment and systems like any other supplier. They would take their chances in an unregulated market. Such items as Modems, display equipment, PBX systems, point of sales devices, including the prices for those items would not be treated as part of the common carrier offering to be protected by the sheltering sanctuary of a tariff. If any kind of governmental regulation is deemed necessary at the Federal or State levels, it would apply uniformly to all supplies. This would mean that if protective arrangements, interfaces, or the use of certificated or type-approved equipment were to be a condition of interconnection, that condition would apply across the board. It would also seem that the marketing practices of the Bell affiliate, including the cost basis for its pricing, would have maximum visibility.

In addition, it would mean that the Bell affiliate could purchase customer equipment from Western Electric and any other manufacturing source. Similarly, any interconnect supplier would have the same access to the same manufacturing sources, including Western Electric. This, I recognize, might require a modification of existing provisions of the 1956 Consent Judgment in the AT&T-Western Electric anti-trust proceeding. There might be some question whether the Judgment as now formulated would operate to restrict Western from selling to non-telephone companies or to restrict AT&T, through its interconnect affiliate, from engaging in a non-regulated activity.

A possible additional measure could entail a spin-off of those manufacturing activities of Western Electric that cater to the equipment market. There is precedent for this latter feature in the Bell System as it exists today. Teletype Corporation owned by Western Electric is a separate entity which manufactures and sells teletypewriters and data processing equipment in a market which, since Bell's sale of TWX service, is essentially competitive.

There is also precedent in the action taken by the FCC in the field of data communications. Here the Commission ordered and the Courts sustained the

rule that common carriers, to participate in the competitive market for the sale of data processing services, must do so through separate subsidiaries so organized and managed as to prevent any commingling of regulated and non-regulated activities, costs and revenues.

There is also some precedent in another 1956 Consent Judgment—one involving IBM. There IBM was required to totally separate its data processing service bureaus from any direct identity and tie-in with its equipment business.

In my opinion that is the type of direction to take in resolving most of the current interconnection problems. These are problems that cannot be remedied by half-measures or reliance upon some 50 regulatory bodies to maintain a healthy competitive environment. Until Bell and other telephone companies are on the same competitive footings as all other suppliers of the interconnect market, your membership will continue to live its precarious existence, and the public will be denied the fullest measure of the benefits of competitive interconnection.

I am indeed aware of the smoke-screens that have been raised to cloud and confuse the issues. I am well aware of the spurious issues now being advanced by Bell and pursued by the NARUC with respect to the effects of competitive interconnection upon the cost of basic telephone services. With respect to these issues, my remarks will be brief.

First, there is no hard evidence to date that business or vertical service revenues have been subsidizing the cost of residential and rural services. On the contrary, there is some evidence that the reverse situation is true. I am following with great interest in this regard the cost of service investigation of the New York Public Service Commission.

Second, if business service revenues are subsidizing residential services, the remedy is to remove this cross-subsidy. And rural and residential subscribers are not made up of a predominance of the poor, the housebound, or the little old lady clinging to the telephone as her lifeline to survival—as the NARUC and Bell would have us believe. There are at least as many struggling small business subscribers as there are affluent residential and rural subscribers.

Third, AT&T's solicitatiousness for the poor and impoverished is somewhat at variance with its traditional policy against giving preferential rate treatment to any special class, such as the enlisted military man, the clergyman or other well deserving cause. AT&T of course has been the subject of unwarranted criticism for this policy. But it stood firm in this policy with both Federal and state regulatory support—which was grounded upon the straight forward and valid premise that subsidy of one class of user by other classes could not be defended as socially desirably or economically sound.

The time is long over-due for relegating to the trash heap the economic hocus pocus which is deliberately being used to fog up the interconnect issue. Let us face the realities that the interconnect market is not a natural monopoly and that it is logically and inherently a competitive market; that interconnect is doing a job for the public; and that interconnect should no longer be used as a whipping boy for the frustrations of the regulator in coping with the more critical issues involved in enlightened and cost-related rate making for telephone service.

With your permission I will now take my seat and return to maintaining my low profile as a private, but involved citizen.

EXHIBIT 4.—*Memo Re PBX Vehicle Selection*

PBX VEHICLE SELECTION—BELL VS. NON-BELL

Problems

The *delivery schedules* of WECO equipment have not met customer requirements in all cases.

The *space* requirement for 757 and 701 type equipment has not been acceptable to some customers.

The relative *cost* per line of WECO equipment is significantly higher than certain non-Bell equipment in often-used line sizes.

WECO equipment in sizes above 200 lines *limited* to step-by-step and electronic vehicles.

Our *competition* can selectively provide equipment at a lower cost to our customers.

Solutions

We are buying IT&T TE-400 and TE-400A equipment because of faster *delivery*, smaller *space* requirements, sufficient line *capacity* and *cost*.

We are planning to buy Nippon Electric NA4-09 equipment because of faster *delivery*, smaller *space* requirements, sufficient line *capacity* and *cost*.

We should consider introducing additional Series packages to be more price competitive.

However

The purchase of non-Bell equipment creates problems:

Additional training,

Lack of documentation,

Spare parts problems,

Lack of Bell Lab and WECO problem assistance,

Design modification problems.

Conclusion

If we plan to remain in the PBX terminal business, we need to be able to purchase through WECO, Bell System standard vehicles with satisfactory *delivery*, *capacity*, *size* and *cost* factors.

THE INDUSTRIAL REORGANIZATION ACT (S. 1167)

(The Communications Industry)

TUESDAY, JULY 30, 1974

U.S. SENATE,
SUBCOMMITTEE ON ANTITRUST AND MONOPOLY
OF THE COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:40 a.m., in room 2228, Dirksen Senate Office Building, Hon. Philip A. Hart (chairman of the subcommittee) presiding.

Present: Senators Hart, McClellan, Kennedy, and Hruska.

Staff present: Howard E. O'Leary, chief counsel; Gerald Hellerman, special financial adviser; Patricia Y. Barrio, editorial director; Janice C. Williams, chief clerk; Peter N. Chumbris, minority chief counsel; and Charles E. Kern II, minority counsel.

Senator HART. The subcommittee will be in order.

Our first witness this morning is a very distinguished Illinois citizen to whom I owe an apology. Dr. Colter was scheduled to testify and did introduce his prepared statement on June 27. It was late in the afternoon. If my life depended on it I cannot tell you why I was not here, but I had—and Senator Hruska will appreciate this—some other responsibilities that prevented my getting back.

This early in the day we are safe, as other responsibilities will not creep up until later. Will Dr. Cyrus J. Colter come forward, and accept my apology.

Senator HRUSKA. Will the Chairman yield?

Senator HART. I yield.

Senator HRUSKA. Mr. Chairman, other official duties call me away from here at 10 o'clock. They are not of higher order but they are of order equally important to that of this committee. I happen to be the ranking man from my side of the aisle on another committee that will meet, so my presence is considered necessary.

I asked for recognition for two purposes. One is to ask that there be made a part of this hearing record a letter which I wrote on July 25 to the White House for the purpose of clarification as to the official position of the administration with regard to the testimony of Clay T. Whitehead, given to this committee on July 9. There was, under date of July 29, a letter written in reply, signed by Roy L. Ash of the Office of Management and Budget, and in its pertinent part, Mr. Chairman, the letter of Mr. Ash reads as follows: "As Dr. Whitehead indicated in his testimony, the specific views he expressed were his own and not those reflecting a considered position

of the administration." There has been a good deal elicited based on the testimony that he gave, and I thought it would be well for the record to have this clarification.

Senator HART. The correspondence will be printed in the record.

[The letters referred to may be found as exhibit 5, at the end of Mr. Whitehead's oral testimony.]

Senator HRUSKA. And the second purpose, Mr. Chairman, that I want to claim a minute or two, since I will leave with your permission, is to recognize the terrific record—civic, political, and public service—that has been compiled by Cyrus Colter these last three decades. It is a remarkable record and I am one of those who have been in public service long enough to know a good record when I see one.

Notwithstanding the difference in our political affiliations and loyalties, Mr. Colter, I want to commend you and congratulate you for that record, and for your willingness to come here to speak from the mountain of experience you have acquired over all these years.

Mr. COLTER. Thank you Senator Hruska.

Senator HRUSKA. I thank you, Mr. Chairman.

Senator HART. Thank you, Senator, and you do indeed describe my feeling with respect to the distinguished career of Commissioner Colter.

Commissioner, when I read that testimony, there were a couple of questions that I wanted to develop, and I am sure staff had others.

You outlined the responsibilities of the Illinois Commerce Commission, a five-member commission.

Is your service still fresh enough on it to give us some idea of the staff which the Illinois Commission has?

STATEMENT OF CYRUS J. COLTER, FORMER COMMISSIONER, ILLINOIS COMMERCE COMMISSION, CHICAGO, ILL.

Mr. COLTER. Yes, sir, Mr. Chairman.

I would like to preface my answer to your question by thanking the Chairman, Senator Hruska, and gentlemen, for your courtesy to me, and I feel that I am not entitled to any explanation of the absence of a gentleman as important as you. You have your responsibilities.

I am privileged to be able to appear here and give my views for what they are worth.

The Illinois Commerce Commission has approximately a staff of 300 persons. Its jurisdiction over public utility operations in Illinois is just about total. We have the jurisdiction of all intrastate public utility operations. The staff has an engineering section which is broken down for the telephone industry, the gas industry, the electric industry; and we have jurisdiction over intrastate railways and bus operations. We have jurisdiction of the motor carrier industry. It is just about a total jurisdiction from the point of view of intrastate public utility.

Senator HART. That is about it, gas, electricity, communications, carriers.

Mr. COLTER. That is right. I say "we" have. I resigned about a year ago, but yes.

Senator HART. With respect to the telephone rates, is the Illinois statute a file and use or a prior approval one?

Mr. COLTER. I beg your pardon?

Senator HART. With respect to the telephone rates, is the Illinois statute a prior approval or a file and use?

Mr. COLTER. This is the way it works: The companies file applications for rate relief. The statute gives the commission 11 months to deal with that. There are two suspension periods. The commission may suspend for an initial period of 4 months, and then if it has not disposed of the matter by then it has an additional 6 months it may resuspend. But from the time the filing is made, the commission must act one way or another within 11 months; if not, the rates go into effect by operation of law.

Senator HART. You know perfectly well that there are some people, including some witnesses, who argue that State regulatory commissions have a bias, a natural bias, in favor of the Bell System. They reason it this way: That because of the long-term relationships which Bell officials and commission staff are required to have with each other, that this is an inevitable consequence.

How do you react to that kind of reasoning?

Mr. COLTER. Mr. Chairman, I am ambivalent on that. There is a danger there, and it has been my experience that Bell people have looked upon their function as staying close to the regulatory picture. It depends upon the commissioner involved. It depends upon the State official involved. But if he is a supine individual, it is possible, entirely possible, for him to overlook his unbiased and objective duty.

I do not ascribe and assign any wrongdoing on the part of the Bell officials at all, but it is naturally—and if I were in their position, I would want to know what is going on, and to not do anything wrong, but to be close to the regulatory picture. So it depends on the State regulator involved, how strong a person he is.

Senator HART. That describes the problem of Government itself.

In your some 20 years of experience, to what extent did you see personnel of Illinois Bell moving into the Illinois Commerce Commission as staff, or Illinois Commerce Commission staff moving on to become associated with Illinois Bell?

Mr. COLTER. I can say categorically that there, in my opinion, has been no concerted effort on the part of Illinois Bell to infiltrate the operations of the commerce commission. Now, that does not mean that they do not have personnel who are careful, who keep abreast of what the commission does; but there has been no evidence, in my opinion, that they have made direct attempts to do that. It would not be successful.

Senator HART. It is my understanding that there are about 60 independent telephone companies operating in Illinois.

Mr. COLTER. Yes, sir.

Senator HART. How do you compare their rates and the quality of their service with Illinois Bell?

Mr. COLTER. General Telephone Co. of Illinois, Central Telephone Co., of Illinois, and some of the other smaller companies give very good service. That has not always been the case. We had, 10 years ago, a considerable problem involving General Tel, the quality of their service. That is no longer the case.

But over a period of years we have had problems with the quality of telephone service on the part of some of the smaller independents. I think the situation in Illinois now is much improved; and I attribute it in some degree, to a substantial degree, to the regulatory attitude of the Illinois Commerce Commission. They have seen that it is necessary to price the service in such a way that the company can give good service. And it has had the stamina, by and large, to insist that the service be adequate.

Senator HART. You have made very clear your concern about the effect of competition on price, particularly as it affects the smaller companies. Now let me make sure I am not confused. There is no way that either the Bell System or the regulator can isolate out the least fortunate among us, the poor, the elderly, the ill, as opposed to the general residential user; is there? There is just no way to do that.

Mr. COLTER. That is correct.

Senator HART. They pay the same rate as the healthy, the rich, and the fortunate.

Mr. COLTER. Yes, sir.

Senator HART. You have indicated that business subsidizes the average household telephones. Last year we had testimony from the communications manager of Montgomery Ward. He said that by purchasing their own system and designing it to serve their computer system, Montgomery Ward could save somewhere in excess of \$1 million a year.

Now, if we prohibit the sale of interconnect equipment and compel Montgomery Ward to lease equipment from Bell, it is going to cost them an additional \$1 million, using his estimate, but Montgomery Ward is just going to pass that on as additional cost to the consumer, will they not?

Mr. COLTER. Yes, sir; yes, sir.

Senator HART. Assuming it is true that business subsidizes the residential user, does business not simply pass that cost on to the consumer?

Mr. COLTER. Yes, sir.

I would like to make my position clear here. The position that I urge is necessarily a narrow position. I would not presume, as I said in my written statement, to advise this committee on how it should resolve this total problem. I merely urge on the chairman and the committee the limited proposition that the residential telephone user has been advantaged by the latitude the State regulator has had as a result of these dollars that have been available to the State regulator as a result of this entire package that the Bell System has available to the public.

Now that is just one facet of the entire problem. I concede that. I do not propose, I do not urge on this committee, that this is dis-

positive of the entire question. I do not at all. This is one facet of it. I think I could characterize my position generally by saying this: That we have something here today that is worthwhile, and I am sure that the committee would want to be cautious as it proceeds in any direction to examine what the consequences are going to be of this action, and as a State regulator I am here to tell the chairman and the committee that I have some concerns, based on my experience, about what some of the fallout will be if these proposals were to be effectuated.

Senator HART. Senator Hruska.

Senator HRUSKA. Mr. Colter, in the process of determining rates, you outline in your testimony so well the steps that are necessary.

First of all, you have to determine the cost of doing business—the cash flow. And then you get into the matter of how much, by the way of revenue, must be exacted in order to meet those costs, plus a reasonable profit.

Mr. COLTER. Yes, sir.

Senator HRUSKA. But it is when you get the thorny part, as you say in your statement: you are not out of the woods when you determine that. Then you will have to find out from where those moneys will come to furnish the sinews of war.

Mr. COLTER. Yes, sir.

Senator HRUSKA. And then the task is entered upon to establish a rate structure among the various classes of customers.

Mr. COLTER. Yes, sir.

Senator HRUSKA. Your statement at that point says this: "It, too, is the point at which social and philosophical considerations inevitably enter into the process."

Mr. COLTER. Yes, sir.

Senator HRUSKA. Could you explain what those social and philosophical considerations are, concisely? And also whether they are good or bad.

Mr. COLTER. Yes, sir.

The State regulatory body is quasi-legislative in its function. The members of the Illinois Legislature are our bosses, and by that I mean they require that these quasi-legislative, administrative bodies in the State of Illinois reflect to a degree the attitudes of the legislature. So, if the commission were to sit up there as a robot and just go right down the line, according to the letter, of everything, that would not be what is considered a realistic regulatory attitude. But the legislators from my area of the State, the black legislators and the legislators representing poor people, want to see their regulatory body have some blood in their veins and some compassion for the man lowest down on the economic scale, so that once the State regulator has determined what the earnings requirement of a company is, then, as you have said, Senator Hruska, it has got to find out where these dollars are coming from. It has got to devise tariffs. It has got to look over the entire customer category to find out where and from whom these dollars are going to be earned.

And so that is the point, as you have said, where the commission makes public policy determinations. The last Bell case in which I participated was one in which the Bell Co. had asked for an increase

of \$80-some million. The Illinois Commerce Commission denied them about half of that. They gave them an increase of about \$44 million, as I recollect. None of that, Senator, was placed on the residential customers. And when I read some place that the effect of my position is minimal, in that it accounts for only 5 percent of the gross revenues, I very much doubt that. If it were so minimal we would not have been able to do such a thing in Illinois, as to give the entire rate increase to categories of customers other than the residential customer.

Senator HRUSKA. So that what you are telling us is that that philosophy and that approach is one, really, that comes from the authority that establishes the commission?

Mr. COLTER. Yes, sir.

Senator HRUSKA. And gives to the commission the mission that is assigned to it?

Mr. COLTER. Indeed, sir.

Senator HRUSKA. And if there is a bias in favor of the residential phone user, it has that basis; has it not?

Mr. COLTER. It has that basis. And the Bell people do not look favorably on this regulatory attitude.

I would say that my position on this thing does not conform, possibly, to the position of A.T. & T. I do not consider my position as being parallel entirely to the Bell position. I am told, and have been given to understand, that the Bell people—in fact, I have heard that John deButts, the chairman of A.T. & T., has said, “Well, if that is what they want us to do, we can live with that.” But that is not my position.

I think that if changes were to be made the Bell System could live with it, but we would have cost problems among the State regulators, who would there have to say, “Well, it costs the Bell Co., the local Bell operating company, a certain number of dollars costwise to furnish telephone service to the residential subscriber; and that is where it is going to go. Those people are going to pay; and that is not the case now.

Senator HRUSKA. In other words, the legislature in its wisdom says they will expect a policy that will favor this type of user, and if the commission strays too far from that they get a little more specific in their statutory edits, do they not?

Mr. COLTER. Yes, sir; indeed.

Senator HRUSKA. And whether it is right or wrong the members of the legislature are pretty much paramount in that field, and they feel a great sympathy and, as you put it, a compassion for that residential telephone user.

Mr. COLTER. Yes, sir.

Senator HRUSKA. And again I say, whether it is right or wrong, there may be degrees where maybe they could be a little more moderate in that way or they could be halfway over to the other end, which says treat them all alike.

Let me ask you whether the businessmen which buy interconnection equipment, the hardware merchants who sell it to them, and the specialized common carriers of telephonic services have consideration

for the residential users of telephones that would be comparable to the consideration extended to them by the legislature?

Mr. COLTER. Well, first, they are unregulated; and I really, of course, do not know, categorically, about their attitude. But I would suspect that they would not have the anxiety and concern for the household telephone user that regulators would have, and that the local telephone company which is regulated would necessarily have. I see no evidence that they would have any anxiety in that regard.

Senator HRUSKA. So that when we have witnesses here who are competitors of the big telephone monopoly, and they come in and say, we want to instill and to insert into this structure a competitive force, and we want to be able to compete fairly with A.T. & T. and its different Bell Systems, let the chips fall where they may, they are contending for, really, a protection of the competitor, rather than the competition; and they are proceeding on a different philosophical basis than the ones who create your commission and who sustain it in its ratemaking and in its supervisory duties; is that correct?

Mr. COLTER. Yes, sir; I entirely agree with that, sir.

Senator HRUSKA. And that is separate and apart from the right or wrong of it. But if there were an equal distribution, by the computer systems, of all of the costs on all of the users of those telephonic services where would the biggest brunt of that adjustment occur?

Mr. COLTER. In my opinion on the household telephone user.

Senator HRUSKA. Would it be substantial?

Mr. COLTER. It would be; in my opinion it would be substantial.

Now, there should be more definitive studies made on this. I have seen some testimony that says you are dealing with a very, very small thing here; that these people who come in and say that this is going to be a great burden on the home telephone users, it certainly is not so, because it is minimal. I do not think that is true, but I have not seen any definitive studies made on that. It certainly does not square with my experience as a regulator. It has been very substantial, based on my experience.

Senator HRUSKA. Is the lack of definitive studies so great that it would not be possible to articulate an estimate, a guess, as to what the degree of increased cost would be?

Mr. COLTER. I really am not in a position to make even a "guesstimate." I can just state to you what the Illinois Commerce Commission has done in some of these cases, and the last one I mentioned, which is not a normal case. Now, I should not make too much of the case I alluded to a moment ago, in which the entire increase was placed on categories of customers other than residential. That is an abnormal case. But it was possible, in that case, and the case developed, and the courts did not say that we were wrong in that case. So, that is about the limits to which I can go in trying to say how substantial it is. But in my opinion, it is very substantial.

Senator HRUSKA. Of course, that would vary from State to State, would it not?

Mr. COLTER. Yes, sir.

Senator HRUSKA. It would be different in an industrial and com-

mercial State like Illinois, as compared, perhaps, to South Dakota or Nebraska; maybe even Oregon, Utah, and so on.

Mr. COLTER. Yes, sir.

Senator HRUSKA. And the conditions would have to be adjusted accordingly; would they not? The base is different?

Mr. COLTER. Yes, sir; the base is different. There is a difference in large industrial States.

Senator HRUSKA. Thank you, Mr. Colter. Thank you, Mr. Chairman.

Senator HART. Mr. Hellerman?

Mr. HELLERMAN. Thank you, Mr. Chairman.

Good morning, Mr. Colter.

Mr. COLTER. Good morning, Mr. Hellerman.

Mr. HELLERMAN. On page six of your statement you ask the question: "How is Bell System's good service possible?"

I guess the first question I have is whether in fact the Bell System's service is good. I would like to call your attention to a general business customer study put out by the Market and Service Plans Department, Research Section, A.T. & T., in March of 1971, concerning the results of 1,000 personal interviews with general business customers in 10 cities across the country, including Chicago.

Among other findings, it appears that 42 percent of those interviewed did not find the telephone service satisfactory. They complained that servicemen are untrained and slow. They experienced dialing delays. They needed more line capacity. They wanted lower rates. And there were complaints that operators were untrained and rude.

Would you care to comment?

Mr. COLTER. Yes, sir, Mr. Hellerman. What is good service is, of course, a relative matter. There are many people who are dissatisfied with all kinds of service, including telephone service and including Bell service, but it is still the best service in the world. A personal note: I happened to be in Paris last September and some business friends of mine said that they, in order to call from Paris to Belgium, had to place the application early in the morning and hope that they would get the call through those few hundred miles at the end of that same day. So it is a question of what is good service. I think we have the best service in the world in this country. Now, that does not mean it is perfect; but it is the best.

I do not know whether that is an answer to your question but that is the best comment I have on it.

Mr. HELLERMAN. We may have the best service in the world now, but the question is, can it be better?

Mr. COLTER. Yes; it can be better.

Mr. HELLERMAN. A recent Businessweek article discussing communications around the world indicated that telecommunications in Europe may be better than ours, or pass ours in technology by 1980. I think some of the companies that are trying to get into this equipment field are introducing at a much faster rate the new electronic equipment.

Mr. COLTER. Yes; I see your point. You are asking if I may characterize the way in which I understand your question, whether or

not a competitive system would conduce to better service, whether or not the regulation is doing the job, or whether or not better service would result if regulation were helped by this competitive aspect that some propose.

I am not able to say that that would not have some beneficial effect, but I am here to point out some of the concerns I have about people who want to go in that direction. After the committee studies this entire testimony it may conclude overall that what your question purports to elicit is the direction in which the country should be taken.

Mr. HELLERMAN. Mr. Colter, in your testimony you cite one of the major reasons for good service is that the Bell System is a single integrated enterprise. Is it your opinion that in order to provide good telephone service it must be an integrated company, or that if you own a manufacturing company you may be in a position to provide better service to your customers?

Mr. COLTER. I think that is true.

There is a virtue that exists in this integration, and if you consider the objective as being one of efficient, unhindered service than I think this integration is a virtue. Now, that does not mean that it cannot have some social by-products that are not good. It is a function of this committee to look into that, but it is my position that there are direct benefits that flow from this one integrated system.

Mr. HELLERMAN. Are you saying then that the 1,700, 1,800, independent telephone companies which do not have manufacturing facilities are not in a position to benefit their customers?

Mr. COLTER. No, sir; I do not say that, Mr. Hellerman. Some of the companies, of course, do have their own manufacturing subsidiaries, but I would not say that if a company does not have its own manufacturing arm that it is unable to give adequate service. It is up to the regulators in those States to see to it that the companies are maintained in a financially healthy condition, number one; and then that they are required by the regulatory policy of their body to give adequate service. That is one of the functions and the obligations of a State regulatory body.

Mr. HELLERMAN. Are the independent telephone companies which are not affiliated with manufacturing facilities not unencumbered with the concern of the financial success of that company and free to go out and purchase the best available equipment, with the latest features and at the lowest cost?

Mr. COLTER. Yes, sir; and that can work two ways. They are unencumbered from some of the disadvantageous effects, but they are also benefited by some of the advantageous effects of integration.

Mr. CHUMBRIS. If counsel will yield at this point.

Mr. Hellerman is trying to make a comparison between A.T. & T., with its integrated setup, and the 1,800 independent companies with their setup, whether they are in a position to be an integrated company or not. Would you like to comment on the ability of the 1,800 companies, whether they are in a position through efficiencies, ability to gain capital, et cetera, to integrate as A.T. & T. has over the years that they have been in operation.

Mr. COLTER. Yes, sir, Mr. Chumbris. I know of some situations

in which small telephone companies have been taken advantage of by manufacturing companies, manufacturers of telephone equipment; and that, of course, is not true across the board, but it is possible. So it, as I said, can work both ways, depending on the individual situation.

Mr. HELLERMAN. In your prepared testimony, at the bottom, I am not certain as to what you mean in the last sentence, particularly the part of the sentence dealing with "the special interest entities that would like to take over Bell's research and development efforts and its manufacturing business."

I am not aware that any of the proposed structural changes of the industry included the sale or acquisition of Bell Telephone Laboratories, or Western Electric, to any corporate entity.

Mr. COLTER. Well, may be I am concerned about something that is not imminent, but I was making this—and there was another point at which I am talking about the virtues of integration and you see, my basic problem here is the solicitude that the people who want to enter this competitive picture say they have for the public good. The directors of those companies want those companies in there to get that business, and there is nothing wrong with that. Thank goodness we still have that system of government in this country, that system of enterprise in this country. But whether or not it is going to help the regulatory picture is something that concerns me; to have an unregulated enterprise that comes in and competes with a regulated enterprise has problems for me.

Mr. HELLERMAN. In your discussion earlier this morning, and in your prepared testimony, comparing residential and business rates, is it true that the expenses related to business services are substantially higher than residential service, that there is higher usage, more internal moves, and in effect more complex equipment than residential?

Mr. COLTER. I would think that is true.

Mr. HELLERMAN. And for that reason, it is not unreasonable that the rates for business services would be higher than residential.

Mr. COLTER. Yes.

Mr. HELLERMAN. Are you familiar with the recent staff testimony of the New York Public Service Commission which testified, in effect, that residential rates may be subsidizing business rates?

Mr. COLTER. I am not familiar with that study, but I just cannot believe that is true.

Mr. HELLERMAN. Are you familiar with the recent Dittberner report which came to the same conclusion?

Mr. COLTER. I read something about it in one of the local newspapers. I also read in that same news article considerable doubts and hedging engaged in with respect to that study, too, by the people who made it.

Mr. HELLERMAN. Going back to the time when you were a commissioner, were the commission and the staff able to get necessary and requested information from Illinois Bell, Western Electric, A.T. & T., to be in a position to know the cost of service, to know the cost of equipment?

Mr. COLTER. That is a good question; and it is not an easy one for me to answer, because there have been situations in which the information was not readily forthcoming, and there have been situations in which we have had to dig pretty hard to get some of the information.

The explanation for that has been that the category of information that was requested by the commission was not kept by the company in that form in those categories and that we were asking for something that they actually did not have, and that it would take some time to acquire that and to pass it on to us. Sometimes we felt that maybe that was not entirely forthright, but I am not here to say that there was any bad motivation on their part. But there have been situations in which it has been difficult for us to get exactly the information that we wanted.

Mr. HELLERMAN. Your problems apparently have not been unique. We heard earlier testimony from Mr. Craver concerning the Michigan Public Service Commission.

In fact, in an order of December 21, 1973, it says, in part, on page 38—

The Commission finds that applicant [Michigan Bell] does not maintain its accounting records to correspond with particular product lines or service offerings, or does not directly associate units of equipment with the actual cost of any particular type of telephone equipment.

And the California Commission, in a case involving Fisher Berkeley Corp. and Pacific Telephone & Telegraph found that Western Electric prices—

* * * may be set and charged without reference to cost or by arbitrary modification of the allocation of manufacturing costs reflecting undisclosed motives and policies and management.

The problem of getting information on costs is not unique only to the State regulatory bodies. In the overview hearing of the Federal Communications Commission on March 26 and 27 of 1974, Mr. Wiley indicated, in connection with their phase II study, that "it has taken longer than anticipated, in part due to staff access to needed information."

When you were on the commission there was an order issued March 21, 1973, in connection with Touch Tone service and equipment. I would be surprised if you could remember that case, but what is interesting is that the last ordering paragraph says—

Illinois Bell shall immediately make a cost study relating to Touch Tone service and equipment to be completed within 6 months from date thereof and results thereof immediately submitted to this commission.

Is that at all familiar?

Mr. COLTER. I do not remember that particular paragraph, but I do know that in many of our rate orders in 1971, 1972, and 1973, we did require some costing information to be furnished to the commission.

Mr. HELLERMAN. Was that expected to be detailed material?

Mr. COLTER. Yes; it was expected to be in sufficient detail to enable the commission to get some understanding of what it cost to provide that category of service.

Mr. HELLERMAN. On September 24, 1973, the Illinois Bell Telephone Co. filed with the Illinois Commerce Commission, in response to that order, a single page which constituted their total submission. It seems as though there was not complete cooperation or compliance with that order.

Mr. COLTER. I was not on that commission at that time when the filing was made, but I am frank to say that I do not think that without knowing all of the facts and circumstances I would categorize that as being an insufficient response to the commission's order.

Mr. HELLERMAN. Mr. Chairman, I have no further questions.

Senator HART. Thank you very much, Mr. Colter, for a very useful contribution.

Mr. COLTER. Thank you, Mr. Chairman, for your courtesy.

[The following was received for the record. Testimony resumes on p. 4009.]

MATERIAL RELATING TO THE TESTIMONY OF MR. COLTER

(Exhibits 1-4 commence on p. 3809)

EXHIBIT 5.—*Order of Illinois Commerce Commission Re Complaint as to Touch-Tone Surcharge*

State of Illinois—Illinois Commerce Commission
57368, Consolidated, 57395

ILLINOIS BELL TELEPHONE COMPANY

Proposed rate treatment for Touch-Tone Calling Service in connection with customer-provided communications systems and switchboard-type attendant positions of manual and dial PBX systems.

ARCATA COMMUNICATIONS, INC. AND PRIVATE TELE-COMMUNICATIONS, INC. vs. ILLINOIS BELL TELEPHONE COMPANY

Complaint as to discrimination as to Touch-Tone surcharge in the State of Illinois.

ORDER

By the Commission: On April 13, 1972, Illinois Bell Telephone Company ("Illinois Bell") filed Ill.C.C. No. 1, Section 9, 10th Revised Sheet No. 2, proposing a monthly rate of \$4 per trunk for Touch-Tone Calling Service in connection with customer-provided communications systems and switchboard-type attendant positions of manual and dial PBX systems, to become effective on May 15, 1972.

It appeared from an examination of said proposed tariff that the Commission at its offices in Chicago, Illinois, and thereafter were continued withholding such hearing and decision thereon, the proposed rates should not go into effect. On May 10, 1972, the Commission entered its order suspending the proposed tariff until September 23, 1972, and on September 6, 1972, resuspended same until March 23, 1973.

On May 10, 1972, Arcata Communications, Inc. and Private Tele-Communications, Inc. ("Complainants") filed their verified joint complaint against Illinois Bell alleging that the aforesaid tariff was discriminatory in that it favored users of Illinois Bell-provided PBX equipment and telephone systems and service over users of independently-provided PBX equipment and telephone systems and service.

Pursuant to notice to Illinois Bell and Complainants both matters came on for hearing on June 21, 1972, before a duly authorized Examiner of the Commission at its offices in Chicago, Illinois, and thereafter were continued without hearing from time to time until November 6, 1972. On October 13, 1972, the Commission, on its own motion, consolidated both matters for the purpose of hearing and order. Further hearings were held on November 15, December 15, 1972, and on January 10, February 7, February 12 and February 26,

1973, on which latter date the matter was marked "Heard and Taken." At said hearings all the parties were represented by counsel and a member of the Telephone Section of the Engineering Staff of the Commission entered his appearance. Oral and documentary evidence was offered and at the conclusion of the hearings briefs were submitted by the parties.

Illinois Bell's General Rate Supervisor testified that the Company presently recovers a charge on a per line basis for the Touch-Tone capability of both the telephone instrument and the central office equipment furnished in connection with individual and party line central office service; for Touch-Tone associated with Centrex-type service it recovers an additional charge per line; and from its own PBX customers it recovers the charge for both terminal equipment and central office Touch-Tone capability through an additional charge imposed in the PBX equipment tariff schedules, no charge being associated with the trunk. Therefore, with the utilization of customer-owned PBX equipment it became necessary to propose a tariff to offer Touch-Tone capability to such customers for a PBX trunk at a price that was related to the additional cost associated with the central office equipment requirements.

He stated that in determining a fair and reasonable rate the Company concluded it cost approximately \$536 per month to provide Touch-Tone capability to PBX trunks in the average Illinois Bell central office; that the average Touch-Tone development of a central office required about 4,800 lines capable of handling Touch-Tone signalling, and that about 75 per cent would actually be assigned for use by customers, of which number about 133 would be PBX trunks. Applying the figure of \$536 to these 133 PBX trunks resulted in an average cost of approximately \$4 per line, which is the rate Illinois Bell seeks in its tariff herein.

Complainants offered testimony and documentary evidence, and, by cross-examination of Illinois Bell's witnesses, sought to support their contention that the proposed rate for Touch-Tone signalling was (1) not cost justified, (2) discriminatory, and (3) anti-competitive.

They contend that Illinois Bell did not offer sufficient evidence in this record to support their alleged cost of providing Touch-Tone capability to PBX customers, disputing the development of a hypothetical central office example equipped with Touch-Tone capability where no per cent of use was determined as to each category of service, e.g., residence, business, centrex and PBX, but only for PBX based on a busy-hour usage when PBX is at its peak; that Touch-Tone central office equipment is the same for residence, business and PBX service, and the rates of the other services are \$1.50 and \$2.00 per month respectively; that a total average of all Touch-Tone services would result in a cost of about 60 to 70 cents per line.

Further, they claimed that without regard to equipment costs, comparing the rate charged Illinois Bell PBX customers having Touch-Tone capability on a per trunk basis with the proposed rate to be charged customers with privately-owned equipment on a per station basis, would result in the latter generally paying considerably high rates. Complainants agreed that if Illinois Bell would file a tariff whereby all customers would pay for their Touch-Tone service equally on the same basis, it would become immaterial what the average ratio of trunks of stations for the average PBX Touch-Tone customer.

Complainants also contended that a proposed tariff which is anti-competitive is a concern which is intimately connected with a finding of whether such tariff is in the public interest. They urged the Commission to consider legitimate business ends and the ability to compete successfully in its determination and approval of rates which are neither unjust, unreasonable, discriminatory, preferential or prejudicial. Although the Illinois courts have not specifically considered this question, Complainants cited authority for same in a United States Supreme Court decision requiring the Interstate Commerce Commission to consider anti-competitive effects, *Denver & R.G.S. vs. U. S.* 387 U.S. 485 (1967); and a recent California decision which stated: "A utility tariff which is significantly anti-competitive would be unlawful unless justified by an overriding public interest . . ." *Com-U-Trol Corp. v. General Telephone Company*, California PUC, Case No. 9323 (1972).

The Commission, having considered the entire record herein and being fully advised in the premises, is of the opinion and finds that:

(1) Illinois Bell Telephone Company, an Illinois corporation with its principal offices in Chicago, Illinois, is engaged in the business of supply telephone and communication service to the public throughout various parts of the State

of Illinois and, as such, is a public utility within the meaning of an Act entitled, "An Act concerning public utilities," as amended;

(2) The Commission has jurisdiction over the Company and the subject matter herein;

(3) Proper notice of the proposed rates was published in accordance with the provisions of the Illinois Public Utilities Act, and notice of the hearings was given to Complainants and to the Company pursuant to the rules and regulations of the Commission;

(4) The tariff filed by Illinois Bell proposing the rate treatment for Touch-Tone calling service in connection with customer-provided communications systems and switchboard-type attendant positions of manual and dial PBX systems, could result in customers with privately-owned equipment paying considerably more for Touch-Tone service than customers with Illinois Bell equipment would pay for such service and, therefore, such tariff is discriminatory and should not be approved;

(5) A rate should be established for Touch-Tone Calling Service in connection with customer-provided communications systems and switchboard-type attendant positions of manual and dial PBX systems that is the same for customers using Illinois Bell PBX equipment;

(6) A proposed monthly rate for PBX trunks with Touch-Tone capability of \$4 each is deemed reasonable and proper subject to a cost of service study to be made to determine appropriate cost associate rates for Touch-Tone capability in connection with residence, business and PBX service;

(7) Illinois Bell's tariff Ill.C.C. No. 1, Section 9, 10th Revised Sheet 2, cancelling 9th Revised Sheet 2, should be cancelled and annulled;

(8) Illinois Bell should be authorized to file tariff schedules providing Touch-Tone Calling Service at rates as set forth in Findings (5) and (6) hereof, to become effective within five (5) days after the date of the filing thereof;

(9) The rate to be charged for Touch-Tone Calling Service as set forth in Finding (6) hereof shall not apply to Illinois Bell's customers presently using Illinois Bell PBX equipment for a period of 2 years, after which time the proposed rate shall become effective as to such customers without further order of this Commission;

(10) Illinois Bell should be authorized to file tariff schedules providing for an installation charge and monthly rate for Illinois Bell PBX equipment with Touch-Tone capability in addition to the PBX trunk rate for Touch-Tone Calling Service set forth in Finding (6) hereof;

(11) Any objections and motions made in these proceedings that remain shall be considered disposed of in a manner consistent with the ultimate conclusions herein contained.

It is therefore ordered by the Illinois Commerce Commission that Illinois Bell Telephone Company's tariff schedule Ill.C.C. No. 1, Section 9, 10th Revised Sheet 2, cancelling 9th Revised Sheet 2, be, and is hereby, permanently cancelled and annulled.

It is further ordered that Illinois Bell Telephone Company be, and is hereby, authorized to file new tariffs in accordance with Findings (5), (6), (8) and (10) hereof, provided, however, such tariffs shall not apply to Illinois Bell's customers presently using Illinois Bell PBX equipment for a period of two years in accordance with Finding (9) hereof.

It is further ordered that any objections and motions made in this proceeding that remain shall be disposed of in a manner consistent with the ultimate conclusions contained herein.

It is further ordered that Illinois Bell shall immediately make a cost study relating to Touch-Tone service and equipment, to be completed within six (6) months from the date hereof, and the results thereof immediately submitted to this Commission.

By order of the Commission this 21st day of March, 1973.

(Signed) MARVIN LIEBERMAN,

Chairman.

[SEAL]

EXHIBIT 6.—*Illinois Bell Telephone Co. Touch-Tone Cost Study*

ILLINOIS BELL TELEPHONE CO., STATE OF ILLINOIS

TOUCH-TONE COST STUDY, CENTRAL OFFICE EQUIPMENT, AS OF DEC. 31, 1972

	<i>First costs</i>
Type office:	
Step-by-Step.....	\$2,301,800
Number 1 Crossbar.....	6,155,200
Number 5 Crossbar.....	5,078,700
Electronic.....	670,700
Subtotal.....	14,206,400
Less coin.....	196,000
Total.....	14,010,400

Senator HART. Our next witness is one of those persons accurately described as needing no introduction. Dean Rostow could be identified as a scholarly writer, an effective teacher, a vigorous public servant. He comes to us this morning perhaps more as the former chairman of the Presidential Task Force on Telecommunications than the former dean of the Law School of Yale, or distinguished Under Secretary of State. But we welcome him in his many roles.

**STATEMENT OF EUGENE V. ROSTOW, STERLING PROFESSOR OF LAW
AND PUBLIC AFFAIRS, YALE UNIVERSITY, NEW HAVEN, CONN.**

Mr. Rostow. Thank you very much, Mr. Chairman. I appreciate your kindness.

It is always a privilege and a pleasure for me to be before this subcommittee, and especially before you.

And on behalf of A.T. & T., at whose request I am here today, I should also say I appreciate the opportunity which you have graciously afforded that company for approximately 2 days to present their affirmative case on some of the problems raised by your bill.

I might explain for the stenographer's benefit that I am an inveterate, incurable perfectionist in dealing with manuscripts. I have made a few textual changes by way of improving and clarifying the text you have received. The stenographer can rely on that text but will note a few changes as I go along.

My name is Eugene V. Rostow, and I live in New Haven. I am Sterling Professor of Law and Public Affairs at Yale, where I received my bachelor's degree in 1933 and an LL.B. in 1937. I did graduate work in economics as a Henry Fellow at King's College, Cambridge, in 1933 and 1934.

I joined the Yale faculty in 1938, after a year of practice with the New York law firm which was then known as Cravath, deGersdorff, Swaine & Wood, and I have been a member of the Yale faculty ever since.

One of my major professional interests, in and out of academic life, has been to combine the use of law and economics in the study of public policy. Until 1955, when I became dean of the Yale Law School, a post which I held until 1965, I devoted half my teaching

schedule to a seminar on the public control of business which was available both to law students and to graduate students in economics. In that period, I was a member of the faculty of economics of the Yale Graduate School and regularly supervised Ph. D. theses in economics.

During a visiting term at the University of Chicago Law School in 1941, I helped to start a course on economic planning which was directed to the entire legal system for economic planning rather than to the economic and legal problems of market organization alone. I continued that experiment when I returned to Yale after the Second World War. The process resulted in my book, "Planning for Freedom," which was published in 1959. I am now working on a revised edition of that book.

I have long taught courses on the antitrust laws and, less frequently, courses and seminars on regulated industries as well. I have also served as a visiting professor at Oxford and Cambridge Universities, where several of my lecture courses dealt with policy problems embracing both law and economics. In 1962 I was awarded the academic degree of LL.D. by Cambridge University on the basis of my scholarly publications. I attach for your record, as appendix A, a list of those publications which deal with economic policy and economic regulation.

[Appendix appears in exhibit 1 at the end of Mr. Rostow's oral testimony.]

Mr. Rostow. During World War II, I worked in the Government on lendlease matters and, more broadly, as executive assistant to Dean Acheson, who was then Assistant Secretary of State for Economic Affairs. In 1949 and 1950 I was executive assistant to the Secretary General of the Economic Commission for Europe, an organ of the United Nations located in Geneva, Switzerland.

Between September 1966 and January 20, 1969, I was Under Secretary of State for Political Affairs. In that position, despite its designation, I was, among other things, the Department's senior officer on economic matters, being the U.S. Deputy Governor of the International Monetary Fund and the International Bank for Reconstruction and Development, and I was responsible for a number of programs in the fields of trade, monetary policy aid, and telecommunications. As Under Secretary, I was also Chairman, as you have noted, Mr. Chairman, of the President's Task Force on Communications Policy, whose final report was filed in December 1968.

I have served also on other public bodies dealing with national and international economic problems, particularly the Attorney General's National Committee to Study the Antitrust Laws, during the early 1950's, and on study groups organized by the Council on Foreign Relations, in New York, and the Atlantic Council of the United States, in Washington. In addition, I have appeared for private clients from time to time before congressional committees, the Interstate Commerce Commission, the Federal Communications Commission, and the courts.

I come before you today, as I remarked earlier, at the request of

the American Telephone & Telegraph Co., to comment on S. 1167, the proposed Industrial Reorganization Act, particularly as it would apply to the Bell System, and on some of the broader problems associated with recent attempts to enlarge the area of competition in regulated industries. In this opening statement I have tried to present an overview of the problem in the perspective of my own policy interests and preoccupations, leaving to other witnesses the detailed examination of particular facets of the matter.

While this opening statement will be largely concerned, Mr. Chairman, with the impact of your bill on the Bell System, I should briefly note my opposition to the bill on more general grounds.

Like most students of national economic policy, and indeed, like most citizens, I fully support the goals which you have so eloquently identified as the objectives of your bill. I have concluded, however, that the means you have proposed to achieve these ends are improper in themselves, and that they rest on erroneous economic theories. As a method for dealing with the genuine economic problems of oligopoly and monopolization in the economy, the bill, I find, is over broad and unnecessary. And finally, I submit, the enforcement machinery contemplated by the bill duplicates our existing enforcement machinery and does so in a notably cumbersome and ineffective way.

Now, let me briefly explain the reason why I have reached these three general conclusions. I can sum up my views, I think, by saying that the passage of the bill could not contribute to the fulfillment of the purposes the chairman has in mind. On the contrary, I believe that such action by the Congress would constitute a tragic setback for the common cause.

Why do I say that the means proposed in S. 1167 are improper? Because I think the bill would impose drastic penalties on people who have not violated any law, and whose conduct has not been found by Congress to constitute a serious problem of public policy. I do not here use the word "penalties" in a narrow sense. I shall not consider the questions—real though I believe them to be—whether the bill, if passed, would be a bill of attainder, an ex-post-facto law, or a taking of property without due process of law. The question in my mind is simpler: Is it fair, is it compatible with our sense of justice, to impose 15 years of ordeal by fire, statistics, and litigation on a considerable part of our economy—a quarter or a third of the economy, perhaps—15 years of ordeal by fire intended to terminate in plans of reorganization for corporations and industries, where there has been no finding of abuse or violation of the law by Congress or by the courts?

We should be clear about the extraordinary scope and thrust of S. 1167. The Sherman Act makes conduct, not economic structure alone, the focal point of legality. Section 1 of the Sherman Act prohibits undue restraints on competitive conditions, and section 2 prohibits monopolization on the assumption, which I believe to be sound, that if restraints on competition are genuinely prohibited, the free entry of competitors will soon offset temporary deviations from the economic norm.

Title I of the Hart bill, however, prohibits the possession of monopoly power in any line of commerce in any section of the country or with foreign nations, and presumably at any moment of time as well. And by way of definition it sets out three rebuttable presumptions, which I find to be economically unsound, for determining when "monopoly power" exists. Thus title I would supersede section 2 of the Sherman Act, and perhaps section 1 as well, at least for the remedies of reorganization, divorcement, and divestiture contemplated by the bill. It is doubtful whether the possession of monopoly power could alone be made a criminal offense.

But section 203(a) (2) of the bill goes far beyond a modification of the Sherman Act. It directs the Industrial Reorganization Commission contemplated by the bill to develop plans of reorganization for each of the seven vast areas of the economy mentioned in section 203(a) (1) of the bill, whether or not any corporation within those seven sectors or industries is determined to possess monopoly power in violation of title I. It is not clear, at least it is not clear to me, whether the bill authorizes the Commission to propose such plans of reorganization to the Industrial Reorganization Court for enforcement, in the absence of a finding of monopoly power in violation of title I. But the Commission is directed to develop such plans in any event, and to make recommendations to Congress and the various agencies of the Government with respect to them.

The Commission would be aided in its studies by a sweeping power to compel the production of registration statements, book, papers, and other information. Section 203(a) (1) (B) would make it the rule for the Commission and the Court to be established by the bill that vertical integration is presumptively illegal, and could survive the organization process only if the respondent successfully bears the burden of proving that vertical disintegration is not feasible or would result in the loss of substantial economies.

Insofar as the bill would apply to the Bell System—presumably by virtue of section 203(a) (1) (C)—it would also amend the Communications Act *pro tanto*, undo the consent decree of 1956, and supersede a considerable body of regulatory and antitrust law.

The general goal of every plan of reorganization developed, proposed, or promulgated under the act would be to make competition more "effective", in the language of the bill. "Effective competition" and "workable competition" are useful words, but hardly words with a clear-cut definition as the discussion of the problem in the report of the Attorney General's National Committee to Study the Antitrust Laws brought out nearly 20 years ago.

Each plan of reorganization under the bill is to be based on three principles: First, the maximum feasible number of competitors at every level without the loss of substantial economies; second, the minimum feasible degree of vertical integration without the loss of substantial economies; and third, the maximum feasible degree of ease of entry at every level.

To start such an engine on its course would be to put the industrial heart of our economy under bitter and unremitting siege. Our law of industrial organization would be converted from a steady

and, on the whole, constructive evolutionary influence, which I believe it has been for many years, into an explosive transforming force. So drastic a step is not, and in my judgment cannot, be justified as necessary and proper by congressional findings of fact.

It is erroneous to contend, as the bill seems to do, that the degree of competition in the American economy is declining in any significant sense, or, as paragraph (2) of the preamble to the bill claims, that the alleged decline of competition in industries with oligopoly or monopoly power is a serious cause of what the bill calls—and I quote—"unemployment, inflation, inefficiency, and underutilization of economic capacity, and the decline of exports, thereby rendering monetary and fiscal policies inadequate and necessitating Government market controls subverting our basic commitment to a free market economy." Restraints of competition and monopoly are serious economic problems in the United States, but they have little to do with the trade cycle and its control. My view on the relationships between market organization and economic fluctuations are developed in chapter 10 of my book, "Planning for Freedom," to which I referred a few moments ago. On the question of the amount of competition in the American economy, and whether that quantum of competition is declining, I attach a short passage from the same book, as appendix B.

[See exhibit 1 at the end of Mr. Rostow's oral testimony.]

Mr. Rostow. On the basis of my own studies and experience, and what I have seen thus far of the hearings on the bill, I believe it would be just as difficult to base the bill on congressional findings of abuse or conflict of interest in the seven sectors of the economy specified in the bill, comparable to the findings which lie behind statutes like the commodities clause of the Hepburn Act, the Glass-Steagall Act, or the Public Utility Holding Act, all of which required some restructuring of industry as steps needed to safeguard the public interest. Generally speaking, our legal system tries—and I think it should try—to make the punishment fit the crime. So far as the communications industry is concerned I have not seen any evidence yet, either by way of abuse or of failure to provide service, which would seem beyond the reach of ordinary regulatory correction.

There is a reason, Mr. Chairman, beyond elementary fairness for my opposition to S. 1167. In making this comment I shall draw on my experience in foreign affairs as well as my academic life.

At this juncture in our history, when we face economic problems more serious and far more difficult than any we have confronted since the Great Depression a generation ago, is it sensible to tie up a large fraction of our best managerial and professional talent in a vast and prolonged process of investigation and litigation, when the energy and imagination of these men and women are needed to improve productivity, to meet strong international competition, and help to devise new programs for restoring a viable and noninflationary national and international economic order?

All that is really claimed for the theory of the bill is that the radical program of industrial reorganization which it proposes might

well do some good. That, I submit, is not a sufficient reason for undertaking so fundamental an experiment with the public interest, and with what Justice Brandeis used to call "other people's money."

My second general ground for opposing the bill is that it is unnecessary, insofar as it purports to deal with the important problems of oligopoly and monopolization in the economy. If Congress is in a trust-busting mood, and if Congress wants to order a fresh start in our long-standing national campaign against unreasonable restraints of trade and monopolizations, that purpose could be readily achieved through the appropriation of more funds to finance conventional antitrust proceedings based on the Sherman Act and the Clayton Act. We have fully adequate Sherman Act doctrines for dealing with the genuine economic problems of oligopoly and monopolization in the economy—doctrines which could be applied effectively, and with discrimination, whenever the Government or indeed whenever private litigants conclude that such suits are justified.

I have attached still another passage from my book on "Planning", as appendix C to this statement, in which some of these doctrines are discussed. I believe that subsequent scholarly studies of the problems confirm the views which are expressed there.

[Appendix C appears in exhibit 1 at the end of Mr. Rostow's testimony.]

Mr. Rostow. One of the most important ways in which unreasonable restraints of competition could be, and in my opinion should be, attacked can only be undertaken by Congress itself. I believe Congress should long since have tackled the job of reforming and often dismantling regulatory systems which have become obsolete, like that which is now suffocating the transportation industry, and like the regulatory systems for some parts of agriculture. They constitute serious systems of market restraint.

Senator HART. I agree.

Mr. Rostow. Thirdly, the enforcement machinery proposed by the bill would be elaborate, expensive, and complex, and would duplicate and indeed it would largely anesthetize our existing antitrust enforcement machinery, which is already far too elaborate, expensive, and complex. We now have two antitrust agencies. Why should we create a third?

If Congress is dissatisfied with the performance of the Federal Trade Commission and the Department of Justice on antitrust problems it should deal with the problem directly and on its merits. There are surely simpler and less dangerous ways for rejuvenating these agencies, if Congress thinks they need rejuvenation, than by passing your bill, Mr. Chairman.

As for a specialized Industrial Reorganization Court, the plain lesson of our experience with the problem since the time of the Commerce Court, I suggest, is that the Federal district courts and the Federal circuit courts of appeal, which have diverse, interesting, and important dockets, have consistently attracted better personnel and done a better and more original job than the specialized tribunals, which tend to be worn down after a time by the repetitiveness of their dockets and by other pressures.

Now let me turn to the problems of applying the bill to what it defines as the "electronic computing and communications equipment industry," and specifically to the Bell System.

I should like to start, if I may, with the framework for analyzing these problems which is offered in our 1968 task force report. In hammering out this part of the report, we agreed on two fundamental principles, which helped us to order our minds and our materials.

The first of those principles was that the basic structural element in our domestic telecommunications system—the integrated provision of public message services—should continue to be treated as a natural monopoly regulated by public authority.

The second principle, a corollary of the first, was that competition should be encouraged where it would not interfere with the technical integrity or the economic viability of the basic integrated message network.

This first principle—the necessity for treating the nationwide integrated switched message network as a unified entity—seemed to us then, and seems to me now, unassailably correct. It is an adaptation to modern circumstances of the reasoning which led to the conclusion two generations ago that telephone service in each town and city should be provided by only one company. It is the same kind of reasoning which leads to any decision of policy that a given service should be treated as a public utility.

Sometimes such a decision is compelled, as a practical matter, by considerations of convenience. In the beginning of the telephone industry, it became obvious that competition among telephone companies in a given city would lead to a wasteful duplication of facilities. Subscribers would have to pay for two or more telephones, and therefore for two or more networks of wires, poles, and exchanges, in order to be able to reach all of the other subscribers in the city. Today the same considerations apply, not only to the organization of the public message service within communities, but among communities.

Long distance communication plays a far more important role in our economy and in our social lives than was the case even 30 years ago. It is obviously necessary and sensible that every public message telephone in the country have direct access to every other such telephone through a single switched network managed as a unit.

Factors of convenience are reinforced by equally strong considerations of economic policy. One of the basic reasons for treating an industry or a firm as a monopoly in our legal system is that of technology. Where economies of scale permit a single firm to supply all the capacity which could be needed by a given market over time, at costs lower than those possible under any alternative pattern of organization, it has long been recognized, both by Congress and by the courts in their construction of the Sherman Act, that monopoly is inevitable and appropriate. Under these circumstances, in Judge Learned Hand's famous phrase, monopoly has been "thrust upon" the supplier.

Considerations of this kind are important in the communications

industry. They determined the recommendation of the task force report that a single entity be established for international communications. The rapid development of high capacity cables and of satellites, in our view, made rational investment decisions about international communications facilities impossible in the future except through a single entity. We found that both modern cables and communications satellites would have more capacity than could be used for some years. Duplication was desirable on defense grounds. Given these facts, we concluded that the single entity proposal was a better solution than any alternative. Without a single entity managing the entire process, the market for international communications service would continue to be divided among cable, satellite, and other facilities by noneconomic compromise.

The same factors require attention when we contemplate the future of long distance communications within the United States. Economies of scale in transmission are being achieved in the network at an astonishing rate, both by transistorized cables and by microwave radio. The Bell Laboratories are developing new technologies which promise even greater capacities and lower costs.

At this point, new Bell transmission technologies are just over the horizon—millimeter wave guides and transmission methods utilizing fiber optics. Mr. Baker of the Bell Labs will discuss these matters with you tomorrow. I shall simply point out from the economic point of view that it would not be possible to use these low-cost technologies if the basic communications network should be fragmented.

To sum up, then, the task force concluded that the unified nationwide switched network for public message service should remain a unified system, and a system of the highest possible quality, interconnecting all terminals reliably and at minimal cost. The reasons supporting this conclusion were rooted, we believed, in technology, in economics, and in security policy. The security considerations for maintaining and improving a unified and relatively invulnerable communications network are apparent. Technologically, we found that considerations of system optimization, system integrity, and system reliability confirmed the prudence of unified network planning, management, and control, especially in a period of rapid technological change. Economically, we thought it cheaper and more efficient, both in the long run and in the short run, for the national integrated switched message service to remain integrated. If such a policy were not pursued, there was a risk that the system would cease to be viable economically, save at the price of large rate increases for residential customers, both for local and for long distance calls. There was a risk as well that the system would cease to be capable of conducting and financing large scale projects of research and development, an area in which Bell has surely had a distinguished record historically, and is still very strong indeed. Some of those projects are extremely expensive. The development of Bell's modern electronic switching equipment, based on advanced computer technology and solid state circuitry, cost about \$400 million. The research and development costs of the latest series of transistorized cables, known as L-3, L-4, and L-5, have thus far

been in excess of \$50 million. It goes without saying that the Bell System's capacity to organize and to carry out successful cooperative projects of research and development, involving teams of laboratory scientists, engineers, manufacturing personnel, and telephone service experts, is a valuable national resource, important to us in war and peace. It is not a resource to be lightly destroyed.

These then, Mr. Chairman, were the main categories of considerations which led the task force to conclude that the first rule of policy for this area was that the Bell System, together with the franchised independent telephone companies, was and should remain the chosen instrument of national policy for providing, managing, maintaining, and improving an integrated switched public message network.

This principle has in fact guided the decisions of the Federal Communications Commission and the State regulatory agencies as an essential part of the concept of "the public interest, convenience, and necessity," which is the governing idea of part II of the Communications Act, and of the State regulatory statutes as well. It is the major premise the courts have used in resolving many controversies about specific rulings of the Federal Communications Commission and of the State regulatory bodies. There was no dissent from this proposition in the task force. We took it to be the command of the law, as it has developed over the years. And we all agreed that the policy behind it was sound. •

I rather think that it might be useful for the Congress to codify the principle of national network unity as an amendment to the Communications Act, to help guide the Commission's work in dealing with many of the proposals for new communications services or technologies which have come before it in recent years. For reasons I shall explain in a few minutes, the FCC has, in my opinion, dealt with some of these proposals in ways which genuinely threaten both the technical and the economic viability of the integrated message network as a whole, and especially the capacity of the Bell System to manage and improve the long distance part of that network. If present trends continue, their foreseeable social costs could be astronomical, both in increasing rates for residential subscribers and in foreclosing the possibility of moving forward into high-capacity, low-cost transmission and switching facilities.

Our second basic principle in drafting the 1968 task force report, as I remarked earlier, we considered to be the corollary of the first. The fundamental axiom of our law with respect to industrial organization is that competition is the rule, and monopoly the exception. Monopoly is inevitable where a single seller can most economically provide the full supply needed by the market, and public utility regulation has been established for a variety of reasons, both in monopoly and nonmonopoly situations. Beyond that point, we felt the rule should be one of competition, policed by the antitrust laws. Thus we concluded that the goal of public policy should be an environment for the provision of equipment and of specialized communications services that would assure outsiders the maximum freedom of opportunity in technology, in manufacturing, and in the provision of services, while preserving the technical integrity and the economic viability of the basic integrated network.

When we drafted the report and considered its provisions, we fully recognized the risks of such a policy. We predicted that managing the interplay between the competitive and monopoly elements in the industry would be the main problem of regulatory policy in the future. And we warned of the dangers that could arise if regulatory authorities confused the principles of competition and regulation. Some of our regulatory experience, especially that with the transportation industry, has highlighted the economic rates which can develop when an industry regulated as a monopoly is deliberately made the target for protected competition which erodes its economic viability. We were conscious of the paradoxical quality of much that has happened, and of the fact that the courts have often admonished the regulators of the communications industry that the national policy for the industry laid down by Congress was one of regulation rather than one of competition for its own sake. We recommended that risks of this kind be minimized by reconsidering policies regularly in the light of experience; by research and planning; and by adhering to explicit economic rules, and most especially, to the rule allowing the regulated carriers to respond freely to competition.

The application of these twin principles to particular problems proved to be a lively and controversial matter within the task force. The task force had many strong-minded members, including its chairman, with deep convictions about many classic issues of public policy. It was therefore sometimes difficult for us to accept the facts, when those facts challenged some of our favorite articles of faith. As a result, our studies and our debates probed a number of these matters in considerable depth.

The basic problem we faced was to define the boundaries of the switched network. All were agreed, as I said, that the switched network should be treated as a natural monopoly subject to public regulation. But what is it? Does the integrated switched network consist only of the hardware and the managerial arrangements needed to provide unified national and international public message services? Or, as a matter of necessity, defined by function, does it include facilities and resources for research, manufacturing, and maintenance as well? If the concept of the network as a natural monopoly went beyond a purely static and mechanical definition of it as a service facility—and we soon concluded that such was the case—how far beyond did it go, both for services and for equipment?

Manifestly, a functional and dynamic definition of the integrated switched network does not necessitate a monopoly position for Western Electric in supplying every component for the network or a monopoly position for the telephone companies in supply every conceivable communication service—private line systems of communication which do not depend upon the switched network at all, for example, like some of those used in railway operations or the military. The Bell Laboratories and Western Electric, in close liaison with the Bell operating companies, have developed and improved many generations of equipment, from the telephone itself to electronic switching equipment. At the same time, Western Electric and the

Bell operating companies buy many, many items of equipment on the open market, and have others manufactured to their specifications by outside manufacturers—microwave radio equipment, for example, computers, data processing equipment, small switchboards for use on customers' premises, some central office equipment, and so on. Usually, such purchases are made by Western Electric; sometimes they are made directly by the Bell operating companies. In making such purchases, the operating companies normally use the facilities of Western Electric as the centralized purchasing agent for the Bell System. In general, the decision to purchase an item from an outside manufacturer, rather than to manufacture it, is made on business and technical grounds, as one would expect.

It seemed to the task force 6 years ago, and it seems to me now, that no arbitrary line can be drawn through the middle of the existing system, with everything on one side of the line defined as "the integrated switched network," and everything on the other defined as part of an open competitive market for supplying the network with equipment, or providing non-network communications services.

The question, we concluded, was one of judgment and degree, not susceptible of hard and fast resolutions.

Looking forward from the vantage point of 1967 and 1968, when we did our work, it appeared to us that some further changes in past practice—in the provision both of equipment and of new and supplemental communications services—should not significantly affect either the technical integrity or the economic viability of the basic switched network. Some changes in this direction were being undertaken by management; others were being actively considered by the FCC and other regulatory authorities. We thought it equally clear that changes of this kind—like those which resulted from the *Carterfone* decision—could be reversed if it developed that they did in fact have an adverse technical or economic effect on systems services as a whole. We did not accept the view that the staffs of Bell Labs and Western Electric, good as they undoubtedly are, include all the people who might make a contribution to the development of the art. And we were skeptical of dire predictions that the world would come to an end if a small-scale experiment were undertaken at the periphery of the Bell System's business. We had all developed some healthy immunities against the "slippery slope" argument, and its cousins, the "entering wedge" and the "camel's nose under the tent." Therefore, our report tended to encourage policies which would not accomplish irreversible change in the structure of the network itself, but which might well lead to improvements in technology or to the more rapid development of genuinely new and supplemental services.

The report thought this goal merited some risktaking, though risktaking limited by clearly stated conditions. The report therefore favored some liberalization of FCC rules with regard to devices connected to the system, and to private line services. That encouragement was subject to two caveats. The first caveat insisted on the overriding importance of system integrity, if service trouble should

develop from the connection of private microwave or satellite systems or of specialized communications equipment to the network. The second caveat was economic. Our report recognized that an uneconomic proliferation of private communications systems could raise serious economic problems for the integrated network. It is therefore recommended, and recommended with emphasis, that more flexible policies with regard to the entry of independent companies providing supplemental or specialized communications services had to be matched, in all fairness, by allowing established carriers a good deal of freedom in ratemaking to respond to or indeed to anticipate the challenge of the new services. The same principles of economic policy would apply to charges for specialized terminal equipment connected to the network. The report took a strong forward position, on economic grounds, about allowing much more flexibility in ratemaking for the common carriers in the communications field, especially in a period of rapid technological change. In this area, the report went beyond the issue of competitive response in its support for telephone company pricing on the basis of elasticity of demand, so long as the true variable or marginal costs of providing the service were covered.

We believed then, and I believe now, that full respect for this principle would have confined the development of independent specialized private line services to those which were genuinely economic.

The troubles which have developed, and developed rapidly, during the last 2 years were caused, I believe, by the failure of the Federal Communication Commission to adhere to this principle in its decisions on the subject. Those decisions have transformed the legal environment for the provision of communications services.

In them, the Federal Communications Commission has nominally followed the recommendations of the report. Thus, in the basic MCI case of 1969 and 1971, authorizing a specialized common carrier private line service between Chicago and St. Louis, and in its correlative 1971 and 1974 reports and orders in docket No. 18920, on specialized common carrier services generally, the FCC explicitly relied on the assumption that the new companies would develop new services and explore areas of demand not reached by the telephone companies. It described this assumption as "controlling" its decisions. It concluded for this reason that the development of independent specialized common carriers would not and could not significantly diminish the business of the existing carriers, and therefore constituted no threat to the economic viability of the system. On the contrary, the Commission was then convinced that the development of new services by the new carriers would expand the size of the total communications market, and indeed actually increase the amount of traffic being carried by the established carriers. And the FCC agreed that the existing carriers should have the opportunity to compete fairly and fully, as the task force had recommended. Similarly, it stipulated that interconnection between the new specialized common carriers and the network be accomplished in ways which assured technical compatibility, to prevent any degradation of service for all users of the network.

Since the FCC's initial decisions on specialized common carriers, the impact of those carriers on the basic public message network has ceased to be a matter of prediction, and has become one of experience. It is now clear—as a number of witnesses for A.T. & T. will bring out today and tomorrow—that the optimistic assumptions on which the FCC decisions were based are untenable. The specialized common carriers have not in fact offered new services or tapped new markets. They have simply duplicated the private line services of the telephone companies at lower rates, and only on selected high density routes where there has been a high revenue/cost relationship, and where Bell's rates are vulnerable to competition because of nationwide rate averaging. As a result, considerable volumes of traffic and of revenue from private line and message telephone services are indeed being diverted from the telephone companies and the Long Lines Department of A.T. & T. Because of this loss of revenues and the prospect of rate wars initiated by the specialized common carriers, A.T. & T. and the telephone operating companies have begun to react by seeking lower rates in competitive sectors of their business and higher rates in sectors which do not face competition. Inevitably, this process will also result in higher rates for the general body of ratepayers.

How much more diversion of traffic will take place in the future will depend on the future of regulatory policy. Enough has occurred already, however, to make it clear that rates for the private lines services of larger business subscribers will be relatively lower, and that those reductions will have ripple effects on the whole rate structure.

This situation has developed, or at least developed on its present and prospective scale, because the FCC has in fact followed a policy quite different from that recommended in the task force report, and announced in its own 1969 and 1971 MCI opinions. The pattern of FCC decisions is clear. In situation after situation, it has authorized the new service, and sought to restrict, postpone, or indeed prevent any competitive response by the existing carriers. In its 1972 decision on domestic satellites, for example, the FCC ruled that A.T. & T. should be prevented for 3 years from using its domestic satellite in providing private line services. And in its 1974 report and order on land mobile radio telephone services, the established telephone common carriers were placed under severe competitive restrictions, both in the procurement of equipment and in the provision of services.

On price competition, the FCC policy has been even more anti-competitive. While it has given lip service to the principle, supported by the Department of Justice, that there should not be a "protective umbrella" for the new entrants, or "any artificial bolstering of operations that cannot succeed on their own merits," it has in fact resisted the price responses of the Bell System to competition. For example, A.T. & T. had to go to the court of appeals for the second circuit to put into effect competitive rates for television customers, and to set aside an FCC ruling requiring special commission approval for the filing of rates on competitive services. And in the

important conflict over specialized common carriers providing private line services, the A.T. & T. proposals for revised tariffs were delayed far beyond the statutory period, in an effort to protect the new services from altogether normal and legitimate competition on the part of the existing common carriers. By way of contrast, the FCC allowed the rate responses of the specialized common carriers to a new Bell System tariff to go into effect immediately. In this conflict, the FCC has thus far failed either to agree or to disagree with the clear economic guideline for price competition of this kind proposed in our 1968 task force report. It has not yet explicitly accepted the proposition, on which the economists are almost universally agreed, that it is economic, and in the social interest, for capital to be used so long as the additional revenue associated with its use covers the additional costs incurred in using it. It follows that true incremental costs are the proper economic benchmark or floor for carrier response to competitive pricing, as the task force report and many other economists have pointed out. Before the FCC and this, committee alike, Bell's position on this critical issue has been vigorously opposed by the specialized common carriers, on grounds which have often been advanced over the years in comparable ICC proceedings.

As a result of these developments, the basic pattern of ratemaking in the industry has been threatened, and indeed has begun to erode. The traditional practice of nationwide averaging has meant uniform rates for service between equidistant points, regardless of costs on any given route. That practice, together with other pricing practices related to business and optional services and equipment, has resulted in low rates for residential users, rates that are low, that is, in relation to the actual costs of providing such services. The social and economic policy behind these rates, which is strongly supported by the State regulatory commissions, has resulted in the rapid growth of telephone service in recent years. More than 93 percent of American homes now have telephones as compared with only 37 percent in 1940.

During the last few years, experience has accumulated suggesting that the technical safeguards for interconnection originally required by the FCC may be adequate at least for terminal gear. This is a problem that will be discussed by Mr. Hough in our series of presentations. The rapid development of the practice of connecting terminal gear to the system has caused service problems, and has caused some degradation of service. The FCC commissioned studies of interconnection in 1970. These studies were conducted by the National Academy of Sciences. The National Academy of Sciences' report confirmed that the technical problem of interconnection was indeed a serious matter. It concluded that the unrestricted connection of customer-owned equipment would threaten harm to the network, to the services the network provides, to the people who work on the network, and should not be allowed. Carrier provided connection devices, the study found, would be one reasonable solution for the problem. It was possible that there were others, notably, the certification of terminal equipment after inspection and test. On that

approach, the NAS report called for further study. Since receiving the report, the FCC in a joint board proceeding has been considering a number of possible solutions for the problem.

The technical aspects for the interconnection controversy have been complicated by another recent development. It now appears, contrary to the original proposals made to the FCC, that specialized common carrier private line services will involve direct connection with the entire integrated message network, causing new problems of network planning and management, and opening up new vistas of competition in the provision of regular long distance service. This development offers, as well, astonishing vistas of duplication of expensive capital facilities which the economy can ill afford.

The National Association Regulatory Utility Commissioners has been increasingly concerned about these developments, that is, about both the technical and the economic consequences of the new competition offered the established carriers by interconnect companies and by specialized common carriers. The association became so discouraged by its inability to persuade the FCC to undertake what it considered to be the necessary investigations that it instituted a major investigation and study of its own, an unprecedented procedure for that old and respected body. The report of its committee on communications was filed in May 1974. It estimates that unless present FCC policies are reversed, and quite apart from any prospective rate increases attributable to inflation and other causes, the telephone rates for residential subscribers will have to be raised between 8 percent and 13 percent by 1980, and by 15 percent to 16 percent by 1984. The association tells us that these are minimal estimates. A bill embodying its recommendations has been introduced in the Senate by Senator Magnuson.

In April 1974, the FCC undertook an investigation into the economic impact of interconnection and private line developments. That inquiry, of course, is pending at this time.

The course of events during the last few years which I have just tried to evoke for you, Mr. Chairman, raises increasingly serious questions. It is manifestly uneconomic, and wrong, to allow the existing carriers to be nibbled to death by specialized common carriers who are seeking to take advantage of a price umbrella. It is similarly uneconomic, and wrong, to allow the carriers to be nibbled to death by interconnect companies who are taking advantage of existing value of service rates for terminal equipment to divert revenues from the carriers to themselves by supplying such equipment to the telephone companies' business customers—private branch exchanges, key telephone systems, and the like. Yet the Commission and the new competitors have attempted to deny the existing telephone companies, and Bell Long Lines, their unquestioned right to meet such competition by prompt and nonpredatory price reductions. They want to have the cake of competition, and eat it, too.

In my opinion, this trend in FCC's decisions gives us the worst of both worlds. It is bad regulatory policy and it is bad competitive policy. It is contrary to the rules of optimization of economic analysis; it is contrary to the principle of preserving the economic viabil-

ity of the integrated switched network which, in my judgment, is part of the concept of the public interest in the Communications Act; and it is contrary as well to the ultimate notions of due process which rule our legal order.

Some of the FCC's decisions have challenged the principle of the integrated switched network even more directly than its decisions about pricing. For example, the FCC authorized the General Telephone & Electronics Co. to have its own satellite linking its scattered operating companies, an obvious breach of the principle of network unity for long distance message service. While G.T. & E. and A.T. & T. have since agreed to cooperate in the development of the satellite, the significant fact for our purposes here is that the Commission was willing to make such a decision.

The uneconomic character of the competition between the Bell System and the interconnect companies and that between Bell and the specialized common carriers brings out some of the dangers of the Hart bill as it might be applied to the communications equipment industry.

The line recently pursued by the FCC corresponds closely to that apparently delineated in the concept of effective competition set forth in sections 203(a) (1) and 203(a) (2) of the bill—the quest for maximum feasible ease of entry, and a maximum feasible number of competitors at every level.

For example, in seeking to maximize the number of competitors, the FCC has fallen into the trap of confusing competitors with competition. Time after time, the FCC encourages the new competitors to enter and then tries to prevent the existing companies from competing legitimately with them. This is not competition; it is the restraint of competition. Competition is not a one way street. The existing telephone companies have the same legal rights as their rivals.

In drafting the task force report, we assumed that full freedom for the Bell System to exercise those rights would keep the development of specialized common carriers to the level justified by genuine innovation and genuine economic advantage. And we pointed out that freedom of entry had to be matched by freedom of exit if the Nation was to avoid the waste of uneconomic investment in communications facilities.

Unless the FCC returns to the rules it announced in its 1969 and 1971 *MCI* case and in its docket 18920 opinions; and unless it applies those rules impartially, Congress will face the dilemma against which the task force report warned. If the existing common carriers are not allowed full economic rate flexibility in responding to competitive pressures, the result may well be both wasteful investment and substantially higher rates for residential subscribers.

Some increases in those rates may occur in any event, as increased competition for the lucrative service to larger business firms forces the telephone rates of business down, with corresponding adjustments throughout the rate system.

The problem of vertical integration in the telephone industry was intellectually the most difficult of all the issues we faced in drafting the task force report:

How should the twin principles with which I started this part of my statement be applied to the ownership relations linking A.T. & T., the Bell operating companies, Western Electric, and the Bell Labs?

Is that ownership structure a simple matter of foreclosing the access of independent manufacturers of electrical equipment to an important fraction of the market for such equipment?

Or is it something more complex?

Vertical integration is a term of many colors. It extends from the restaurant which makes its own pies, or the steel mill which owns a coal mine or an iron mine, to the vertically integrated oil companies, most of which extract petroleum from the earth, transport and refine it, and distribute its products at wholesale and retail.

The effect of vertical integration on competition, on market opportunity, on innovation, and on other values to be served by the private enterprise system is the subject of vehement and sustained debate in the legal and economic literature.

Sometimes the effect of vertical integration on competition presents an easy problem. It is not very difficult, for example, when the specialized producers of Pennsylvania lubricating oil cannot reach large sections of the consuming market—the factual situation of the *Standard Stations* case. Nor is there much of an issue when the seller of a patented record player or motion picture projector, which for the moment has full monopoly power, tries to insist that only his records or his motion pictures can be used with his machine.

The problem of vertical integration in the communications equipment industry, which is dealt with in section 203 of the Hart bill, is much more difficult.

The Bell System is an intricately reticulated institution which has developed over the years, taking shape in response to economic conditions, and the decisions both of management and of government. The system consists of 24 telephone operating companies, whose stock is owned in whole or in part by A.T. & T. A.T. & T. advises and assists the Bell operating companies in technical, financial, operating, and other matters. It constructs, manages, maintains, and operates the nationwide long lines network connecting both Bell System and independent telephone operating companies. And it owns all the stock of the Western Electric Co. Both companies jointly own the stock of the Bell Laboratories.

Battle has raged for many years over the legality of this structure under the antitrust laws.

On one side, many have contended that Western Electric and the Bell Laboratories are unnecessary to the existence and development of the switched network, and that the ownership structure of the Bell System excludes many promising manufacturers and scientists from the field of communications technology. As a result, these men argue, technological progress is denied the stimulus of competition. They also claim that Western Electric prices are too high, permitting the Bell operating companies to pad their rate bases, and thus collect higher rates from subscribers than would otherwise prevail.

Many members of the task force were predisposed to accept these plausible and familiar arguments. We were aware of the criticisms

of the consent decree of 1956. We knew that the antitrust laws do not distinguish between good and bad trusts, and that the law scrutinizes legal monopolies carefully, to make sure that their legitimate market power is not abused to yield illegitimate rewards—that is, market advantages beyond the metes and bounds of their legal monopoly position.

As we studied the problem, however, the question in our minds changed in character. The question we had to answer first, we concluded, was not whether the Bell System was “good” or “bad” by some tangible or intangible standard of economic performance, or “too big” by some even less palpable criterion, but whether the structure of the Bell System, as it has evolved, is an appropriate way to organize, manage, maintain, and improve the switched network. There were nuances of difference among the members of the task force on this point, and some ticklish problems of drafting acceptable conclusions. But there were no dissents.

My comments on this phase of the report represent my own view at the time, and my own view now. I believe they also represent the consensus reached by a large majority of the members of the task force. That consensus, within the limits of our mandate, was a finding that the basic processes through which the Bell System functions were and are determined by the technological and managerial problems with which it deals—that is, that its manufacturing, research, and service components are indispensable to the fulfillment of the goals to which it has confined its corporate activities—the provision of common carrier communications services for the United States, and of course, its occasional work for the Government.

Once we had reached this conclusion, the arguments for vertical disintegration, in our minds, were answered. If the association of Western Electric, the Bell Laboratories, the Long Lines service, and the Bell operating companies was an appropriate and reasonable way to organize and manage the network it could not be a violation of the antitrust laws. By definition, the switched network was a regulated natural monopoly, and to that extent exempted from the antitrust laws.

One round of the battle over the structure of the Bell System had been resolved in the consent decree of 1956. That decree confirmed the company's policy of confining its activities to the provision of communications services for the United States, and of services to the Government. It supplemented the restraints on Western Electric pricing policies which had already been imposed by management, by the FCC, and by the State regulatory agencies.

In negotiating the consent decree, the Department of Justice had reached the conclusion that the basic ownership structure of the system should not be changed; that is, that research and manufacturing capacities were necessary to the fulfillment of the primary mission of the Bell System as the organizer, manager, and improver of the American telecommunications network. Subject to various safeguards the decree leaves it to the system to make its own decisions about when to manufacture equipment and when to purchase it.

By implication at least, the Hart bill would reverse that decree.

The studies and debates of the task force, and the studies of the subject I have made during the last year, support the general conclusions which are embodied in the decree.

The results of the task force examination of the problem appear on pages 2 to 6 and 37 to 42 of chapter 6 of its report, and on page 17 of the introduction against the background of the discussion of price policy at pages 16 to 21 of chapter 6. We found that policy should encourage every feasible possibility of enlarging opportunities for competitive access to the market for communications equipment without breaking or weakening the ties which link Western Electric and the Bell Laboratories to the Bell System operating companies, and, of course, without weakening the technical and the economic viability of the integrated switched network.

The weightiest reason for this conclusion, I believe, appears at page 42 of chapter 6 of the task force report, the problem of developing, perfecting, and installing new products. New products come into the system at an astonishing rate; 22 percent of the current output of Western Electric consists of products which did not exist 5 years ago. The fraction is 50 percent if we take a time frame of 10 years. On the basis of my more recent studies, I should now add, with nearly equal emphasis, that the association of Bell Laboratories, Western Electric, and A.T. & T. is justified also by the problem of maintaining the network, a complex process which often involves the sustained presence both of Western Electric and of Bell Laboratories personnel in the operating companies, and of operating company personnel at Western Electric or the laboratories, to help solve difficulties that arise in the adaptation of new technologies to the rhythm of operations.

The key to the dilemma, the task force thought, is the issue one faces in every antitrust case: defining the market. Were we talking about a market for communications equipment, as if that equipment were as stable, as fungible, and as definable, say, as lubricating oil, business machines, computer software, paint, or salt tablets, to recall the products involved in some famous antitrust cases? Or were we talking about a market which was in fact a process, a market which could be defined only as communications equipment and technology produced, maintained, and ultimately replaced by extended cooperative effort on the part of the Bell Laboratories, Western Electric, and the Bell operating companies working together?

It seemed apparent to most of us then, and seems apparent to me now, that for many kinds of communications equipment going through nearly continuous processes of experiment, development, test, and change, "the relevant market" for purposes of antitrust enquiry, or enquiry under the Hart bill, could not be defined as the market for Bell System operating company purchases of equipment from the shelf. There is no such market because there is no such shelf. Rather, the market should be defined as one for developing and improving complex equipment, and the scientific knowledge required to use it. If this conclusion is correct, it cannot be said that the ownership structure of A.T. & T. forestalls or forecloses the market for communications equipment.

In my opinion, Mr. Chairman, innovation is the most important of economic activities, from the point of view of social and human welfare, and encouraging innovation is one of the most important goals of public policy. Innovation is a process, or an occurrence, which defies easy formulas. It is both a psychological and an economic phenomenon. Schumpeter thought innovation required a considerable degree of monopoly power, which alone could assure an economic reward for the innovator. I have never been much impressed by that argument. It has seemed to me too simple. The innovating mind is a particular kind of creative mind. In a favorable environment, it operates without much reference to economic rewards: in a university, for example, or in the military establishment. It has seemed to me that some stress is desirable, perhaps necessary, in stimulating innovation, the stress of war, however tragically, has led to many innovations; so have the stress of economic competition and other forms of rivalry and emulation. While too much stress paralyzes people, the complete absence of stress leads many to vegetate.

True innovations have cropped up at various times under varying economic circumstances, and from diverse sources. In the communications industry, the Bell Laboratories have proved to be a favorable breeding ground for innovation. It is hard to be sure whether the reason for its record is farsighted management; the interaction of a considerable number, a "critical mass" of scientists, living and working together; the particular structure and ethos of the Bell System, with its diverse signals and stimuli; or luck. While the Bell Laboratories operate in a protected economic environment, perhaps one Schumpeter would have approved, it is also an environment I found under a good deal of stress. The Bell System, I found, is very conscious indeed of the pressures upon it, technological and economic pressures involved in the need for compatible network growth; political and legal pressures, like those represented by this set of hearings, like the continuing scrutiny of the FCC and State regulators, and the pendency of the task force study a few years ago; competitive pressures, like the development of rival companies, and of companies seeking to become rivals; and scientific pressures, the concern that a laboratory here or abroad might outstrip Bell in the race for progress.

Some of these factors or all of them in combination have surely contributed to the Bell record in innovation. It is a good record, by any criterion. In a field of advanced and complex technology like that of communications, where one research breakthrough flows out of another, it seems safe to contend that research and development can be carried on rationally only by the cooperative efforts of scientists, manufacturing engineers, and operating men, working together for extended periods of time. I do not mean to disparage or to dismiss the possible role in scientific progress of the isolated outsider, the individual inventor working in his laboratory or garage. But modern science necessarily depends on organized and large-scale collaboration among interdisciplinary groups. Such collaboration is not alone enough to guarantee success. But it is probably

a necessary condition of success, certainly for the application of new ideas, and usually for their discovery as well.

Collaboration of this sort among men and women of complementary experience, trained in different disciplines, seems equally indispensable to the other tasks of modern communications technology: Systems design and systems management; the training and retraining of personnel; the testing and standardization of equipment, and its maintenance; and forward planning. One such pattern of collaboration, involving these functions, as well as research, development and manufacture, has been organized by the Bell System. In the nature of things, the necessities of the task of improving, developing, and maintaining the switched network will continue to require the sustained cooperation of research, manufacturing, and operating experts, whatever the corporate structure of the system might become. Congress could hardly forbid interdisciplinary research, development, and maintenance teams, after all.

Let me illustrate my point from the side of service and maintenance rather than that of developing new technology. I found that aspect of the problem particularly striking in my recent study of the Bell System. The telephone companies never have much excess capacity because of its cost. Late in 1967 the high levels of employment of the mid-1960's became a boom. The demand for telephone service rose suddenly, and at a rate which had not been foreseen, either within the Bell System or outside it. The number of telephones increased rapidly, and the number and duration of calls per telephone increased even more rapidly. In many parts of the country, and particularly in New York, demand outstripped the capacity of the network to handle it. The New York situation was compounded by several features peculiar to New York: A spectacular increase in the volume of stock market transactions, for example, coupled with a shortening of working time at the stock exchange, which meant higher peak loads. As a result, there were serious service problems. The full resources of the Bell System were mobilized on a crash basis to deal with them. Experts from Bell Laboratories and Western Electric worked with the New York Telephone Co. personnel to develop a program for redesigning and enlarging the New York central office network. Innovations emerged under the pressure of necessity. Equipment was diverted from less urgent orders to help solve the problem once it had been diagnosed. Technicians were brought in from all over the country to help. New York Telephone Co. increased its installation staff from 1,553 in 1968 to 2,533 in 1970 and 2,582 in 1971. In 1970, nearly 1,000 out-of-town employees of the Bell System were working on the problem of installations in New York, 536 in 1971, 585 in 1972. New York Telephone Co. purchases from Western Electric alone, which had fluctuated between \$245 million a year and \$279 million between 1962 and 1967, being \$253 million in 1967, shot up to \$472 million in 1969, \$631 million in 1970, \$517 million in 1971, and \$514 million in 1972.

Comparable but less severe problems existed in a number of other cities, and were dealt with in a similar way.

For these reasons, which I have just attempted to summarize and

identify, the task force 6 years ago reached the conclusions I have set out. My recent examination of the problem in preparation for this hearing has fully confirmed my belief in the soundness of these views. The key to those conclusions, the conclusion from which the others were drawn, is that the structure of A.T. & T. does not represent a vertical integration in the ordinary antitrust sense. On the contrary, we found it to be a reasonable and indeed an inevitable system for organizing the kind of inputs which are indispensable to the process of maintaining and improving an integrated national and international system of communications, research inputs; engineering inputs; manufacturing inputs; and the inputs of overall management. The pattern which the Bell System has developed for the conduct of that process strikes me as an efficient and effective way to bring all these perspectives to bear on an infinitely complex problem of systems management. I see no reason to subject that organism to radical surgery.

On the contrary, on this ultimate and basic issue raised by the application of the Hart bill to the Bell System, the value to our economy of maintaining the integrated communications network as a viable entity, and of allowing Western Electric, the Bell Laboratories and the Bell System operating companies to work together in developing, maintaining and improving it, it seems to me that a reorganization of the communication equipment industry along the lines prescribed by the bill would be a disaster, and a disaster without compensating advantages.

Some recent studies have criticized the economic consequences of certain antitrust divestiture decrees, particularly as they have affected research and development. The conclusions of those studies may or may not withstand analysis. But they should be taken seriously. The most enthusiastic believer in antitrust enforcement must acknowledge that innovation is a most particular problem; that institutions capable of innovation are rare; that they come in many sizes and shapes; and that they are difficult and expensive to develop, and easy to destroy. I speak to this theme with special conviction because I am of the university world. Universities should be institutions favorable to innovation. Sometimes they are. But I know how short the list of genuinely great universities is, and how vulnerable their greatness.

I urge you, therefore, to think long and carefully before you propose a step which I am convinced would weaken our national capacity for innovation.

Senator HART. Do you want to get on to a noncontroversial subject while you pause there, and tell us those universities you believe genuinely to be great?

Mr. Rostow. Do you not believe in the fifth amendment?

[General laughter.]

Mr. Rostow. I have friends everywhere throughout the university world. I will come and whisper in your ear after the hearing.

Before concluding, I should say a few words on the testimony presented to this committee earlier this month by Mr. Clay Whitehead, the Director of the Office of Telecommunications Policy.

It seems to me, reading his testimony, that the principal differences between Mr. Whitehead and me are differences about facts, and about one fact in particular—the nature of the integrated switched network—rather than differences of analysis or of policy outlook. On many specific policy issues, indeed, we reach the same conclusions.

Mr. Whitehead starts, as I do, with the proposition that competition should be the rule and monopoly the exception in our law of industrial organization.

Applying that proposition to the process of change in the communications industry, he concludes that communications policy should be governed by four principles.

The first of Mr. Whitehead's principles is that the public utility monopoly in what he calls conventional telephone service is still appropriate today.

I find it difficult to tell from Mr. Whitehead's testimony whether he thinks the public utility telephone monopoly should be local or national in character. At some parts of this testimony, he seems to be talking about the telephone network as if it involved simply the provision of local services, with perhaps a residual long-line connection, not necessarily part of the system. At others, however, he seems to be talking about the national switched network, the basis for what he calls our universal low-cost telephone service. I believe that Mr. Whitehead regards the maintenance and development of the national switched network, and of the public message services which use it, as the appropriate definition of the scope of his first principle. But I cannot be sure. That definition was the predicate of the task force report in 1968, and of my testimony today. In our view, the natural communications monopoly nowadays must include the provision of integrated switched message service on a national basis, managed as a unit.

Mr. Whitehead's second principle is that the monopoly concept should not be extended to communications services other than those which, in his language, have "to go through the switched telephone network."

What are the peripheral communication services which do not have to go through the switched network? Mr. Whitehead offers a definition on page 1611 of his testimony: "Most everyone wants or needs a telephone," he says, "but not everyone wants a private branch exchange or access to data processing equipment or a private line between two cities, or a phone in his car, or any of the special capabilities which electronic technology can make available to particular uses, packaged to meet their particular needs."

Mr. Whitehead's list does not really fit his test. A private branch exchange, for example, is designed to use the network, as may or may not be the case for the specialized communications services which he mentions.

The difficulty with his definition, however, insofar as it does apply, is that the companies offering specialized communications services, as contrasted with equipment, generally insist on going through the national switched telephone network. And they press the point more

and more urgently. Their customers are not content to be connected only to each other. They want to be able to reach all the millions of terminals linked together through the switched network.

The distinction between Mr. Whitehead's first and second principles, then, simply does not work. As I said a few minutes ago, one cannot draw a straight line through the system, with the switched network on one side and the rest of the communications industry on the other. That is why we chose another pair of definitions in the task force report—the definitions I have used today. We simply could not identify a sphere of monopoly for communications services which use the integrated switched message network, and a sphere of competition for services which do not. The new services, or most of them, end up trying to use the network. I think our definition in the task force report is a good deal more realistic than Mr. Whitehead's, although more difficult to apply—that competition should be allowed for supplemental services or equipment whose use would not threaten the technical or economic viability of the basic national switched message network. There is, in my judgment, no easy way to escape from the dilemma of judgment.

As I tried to bring out in my testimony earlier, my objection to duplicative and uneconomic services is a much deeper one. Manifestly, most of the new services are both technically and economically intertwined with integrated switched network. The policy problem they raise is not so much whether they use the switched network, but whether that use impairs its technical and economic integrity.

Mr. Whitehead's third principle follows from his second, and suffers from the same difficulties I have just tried to point out. A new entrant should be free, he contends, to offer any communications service, except what he calls conventional telephone service, without the prior permission of the FCC. What is now clear, however, is that conventional telephone service is exactly what the specialized intercity common carriers are offering. So, indeed, are the companies offering private branch exchanges, key telephone systems, and extension phones. They want to offer communications services or equipment which, in Mr. Whitehead's terminology, use the integrated switched network.

Mr. Whitehead's fourth principle concerns the freedom of the customer to use any communication device he wants over the telephone lines, provided the problem of technical compatibility is solved. Mr. Whitehead regards that problem as easy. Others think it is more difficult. In addition, as I tried to bring out earlier, some of the rate and regulatory problems that have arisen in this context are serious.

Mr. Whitehead and I are agreed in criticizing the way in which the FCC has handled rate and regulatory problems of competitive entry and response. He says the FCC has become a cartel manager, apportioning markets among pseudo-competitors and, by implication at least, he criticizes the FCC for setting up artificial barriers protecting the specialized common carriers against Bell Co. competition. Mr. Whitehead urges, as I do, that the Bell companies should be free to offer vigorous competition to those who are seeking to sell

rival services or equipment, although he does not make his position clear, as I have tried to do, on the issues of price policy which this approach involves. In Mr. Whitehead's view, the Bell companies should be allowed to offer what he calls nontelephone services freely, and he sees no reason to separate the ownership of Western Electric and the Bell Laboratories from the Bell System.

The main difficulty I find with Mr. Whitehead's testimony as a guide to policy, then, is in his definition of the basic switched network which, we are agreed, should remain a monopoly regulated by public authority. I think he has offered a definition much too simple and mechanical to be useful to you, and one, furthermore, which completely ignores what I believe to be the central problem of policy in this field—protecting the technical and economic integrity of the basic switched network.

The controversies we have reviewed over the putative application of the policies of S. 1167 to the Bell System, as part of what the bill calls the communication equipment industry, bring out, I believe, some of the inherent difficulties in reconciling our national policy for preventing restraints of competition with our equally clear national policy of having some sectors of the economy organized as regulated monopolies. The conflict between these policies is more than 80 years old. The Interstate Commerce Act was passed in 1887, and the Sherman Act in 1890. Some of the earliest and most famous Sherman Act cases concerned the railroads. The law books ever since have been full of antitrust cases dealing with regulated industries—shipping lines, banks, stock exchanges, and many others. The conflict between these two policies can never be neatly or finally resolved. All that can be expected, as our history attests, is a more or less sensible accommodation in each situation between our reluctant acceptance of the necessity for monopoly in some instances, on the one hand, and our deep and almost instinctive preference for competition on the other.

My purpose here today has been to delineate a line of analysis which might contribute to a sensible accommodation in the field of communications policy. I think it might be helpful if I summarized my principal conclusions.

The first basic conclusion, I should say, is that the integrated switched network, national and, indeed, international in reach, should continue to be treated as a natural monopoly managed by the Bell System in cooperation with the independent telephone companies, and regulated in the public interest, in order to preserve its technical and economic integrity.

That switched network, I have contended, is an organic entity, necessarily including research, manufacturing, operating, and managerial elements. Therefore, the Bell System, which is the chosen instrument of the law to manage and develop the network, is not a vertical integration in the antitrust sense.

Public policy should allow and encourage competition in the sale of communications equipment and services to the extent that such competition is consistent with this principle.

Second, insofar as we do decide to allow competition in areas of

the economy close to those being regulated, the lesson both of theory and of experience is that the competition should be real competition, hard competition, equal competition, not the pseudo-competition of a cartel, or the protectionist devices of mercantilism or syndicalism.

Third, in its present form, S. 1167 violates the principle of network unity by requiring the breakup of the Bell System, at least presumptively. And some of the suggestions urged upon the committee by other witnesses go further in recommending the separation of Long Lines, Western Electric, and Bell Laboratories from A.T. & T. and from the operating companies and from each other, and the division of Western Electric into a number of separate companies. Separately and together, these proposals would make it nearly impossible to organize and conduct a progressive and unified message network in the United States.

Fourth, the Federal Communications Commission has violated the first two conclusions I have just stated. It has violated the principle of network unity in a number of significant regards, both economic and technical. It has authorized competition which is inconsistent with the requirements of system integrity, and it has practiced protection while preaching competition. It has authorized too many domestic communications satellites and created a regulatory climate sympathetic to demands for protecting the excess investments against competition. In the domestic satellite field, FCC has already restrained A.T. & T. from entering a sector of the market for 3 years.

Similarly, it has imposed a number of restrictions on A.T. & T. in the market for land mobile point to point services. When A.T. & T. lowered its rates in order to meet the competition of specialized common carriers, the FCC sought to delay the effectiveness of such rates in order to protect the new competitors from the challenge of rates which in all cases would have been well above the benchmark of true incremental costs. When, on the other hand, the specialized common carriers reduced their rates to meet those of the Bell System companies, their tariffs were allowed to go into effect immediately. The FCC has thus far failed to commit itself to incremental cost as the proper floor for competitive cost responses in a regulated industry.

Fifth, developments since the preparation of the task force report of 1968 require a fresh look at many of its conclusions. Some of the expectations of the time have proved to be illusory. The task force and the FCC had been repeatedly assured, for example, that specialized common carrier private line services would break new ground, both in technology and in marketing. Thus far, at least, such services have been indistinguishable from the services offered by the Bell System except in price. They have resulted in the diversion of business and of revenues from the existing carriers, thus setting in motion a chain reaction of price and rate responses, and a chain reaction, too, of controversies before commissions, associations, courts and congressional committees. The National Association of Regulatory Utility Commissioners is calling for major changes in policy direction as a result of all that has happened during the last 6 years with regard to the connection of terminal equipment to the telephone system, and the growth of specialized common carriers.

The strong economic interests which have successfully pressed for the new rules continue to press for their maintenance.

These controversies pose basic choices of public policy. Does Congress want to continue the historic pattern of telephone rates, which has favored the residential subscriber for basic exchange service? Or does it want a rate system in which each class or group of subscribers would come much closer to paying its own way?

Does Congress want to encourage the entry of new competitors into various phases of the communications industry, provided that there is no significant threat to system integrity, and only if the new entrants can make their way of genuinely competitive grounds? Or does it want to subsidize the entry of new competitors, even at considerable risk to the technical integrity and economic viability of the unified switched network?

If we want to have a rational public policy, the responsible agencies should assemble and consider the facts bearing on the merits of a series of current and prospective controversies over a whole series of issues which sometimes seem small in themselves, but have the capacity to shape the future of the communications network: Those concerning the connection of terminal equipment and specialized communications systems to the network; those concerning the relationship between State and National regulatory authority in this field; and finally, those concerning the rules which should govern the competition of regulated and unregulated firms in several sectors of the communications industry.

I recognize, Mr. Chairman, that reasonable men differ and differ strongly about the gravity and import of several of these developments. May I end on a note of caution about how such differences of view should be resolved?

We are living at a time when unprecedented change has put all of the institutions of our society under unprecedented stress. Many of those institutions are not working well—our schools, for example; our railroads; the Post Office; our arrangements for providing health care. Each of us could add to this list from his own experience.

Is it sound policy to allow the basic system for providing our communications services to be broken up and reorganized in the name of an abstraction, at a time when that system has demonstrated a nearly unique capacity to adapt itself quickly and efficiently to these turbulent streams of change?

I do not think so.

Senator HART. I doubt very much whether any other committee in this busy building in the Old Senate Office Building this morning has been exposed to a more interesting discussion of a drier subject than what we just heard. And if anyone was a late arrival and did not know that it was basically an academician who was testifying, your concluding note would have suggested it. The recognition that reasonable men can differ strongly about some of these questions is not always the concluding note of many witnesses around here, and it is a welcome one.

You certainly saved your fastest ball for the end, that suggestion that there are other institutions which seem more decrepit in the turbulent streams of change?

We have been joined by the senior Senator from Massachusetts during the course of your testimony. As a constituent, I am sure he would like a moment to bid you welcome,

Mr. ROSTOW. I must correct the record, Senator.

Senator HART. Oh, no, no. It is Yale, it is not——

Mr. ROSTOW. I come from Yale; it is in Connecticut.

Senator KENNEDY. How could you make a mistake like that?

Senator HART. Not being an Ivy League graduate, I have difficulty keeping them apart.

Senator KENNEDY. Well, in any event, I want to extend a warm word of welcome to Professor Rostow. I think many of us who have followed over the period of recent years his involvement in issues of public concern, and all of us in the Congress give a special weight and a special consideration to his comments on matter of public policy.

Even though we are across the borders of Connecticut we admire greatly the work that you have done and the interest that you have taken in so many areas of public concern.

As you know, Professor, there are many aspects of the Bell System in my own State of Massachusetts. And as I have said, up there, Western Electric, which is one of the great employers north of Boston, has really been the leader as far as the public awareness and interest in the community and have, I think, practically in every respect been the kind of model good citizen for our community. They have taken it very seriously, in a number of different areas, whether it is in education of the students that are working part time in their plants or factories, or water pollution areas and concerns. They have really been extremely active and interested, and I, for one, find that in those instances, because they have been sensitive to matters of public concern, I always feel that when they come to the Congress and talk about the impacts that legislation has upon their interests, I always, from my own point of view, find them much more persuasive.

There are so many industries that really feel their only responsibilities are strictly to the shareholders. They really do not have the kind of interest that this company has. And then they come to the Congress and want very special kinds of considerations.

So I welcome you here.

I apologize for not being here earlier, but I was at the funeral services for former Senator Morse so I missed the statement and commentary.

One of the themes that you have in your statement is that we really ought to leave the outer limits in terms of a corporate structure to the natural economic interplay of forces.

And then you, as I understand, recognize that there will be an increase in the costs to the consumers. I am just wondering what you think our responsibility is in terms of letting these costs continue to escalate. Should we just let that happen; should we just stand by; or should we be willing to take some kind of action?

I would be interested in the reactions you would have to that.

Mr. Rostow. Before I answer your important question, Senator

Kennedy, may I thank you for your very kind words of welcome. I am also sure that the men from Western Electric here today will appreciate what you said about the attitude of that company.

Yes, I did try to define the outer boundaries of the switched network in terms of the interplay of competitive forces, because I can find no better way of making a sharp definition. You are quite right. I did say in this paper that the recent FCC policy of encouraging the entry of manufacturing companies which make telecommunications equipment for connection to the system and of common carriers offering specialized private line services of one kind or another would inevitably have an impact on the rate structure. In the nature of things, that impact would necessarily lead, given the importance of the principle of the margin in the economic analysis, to ripple effects throughout the rate structure, and higher rates for the residential user and subscriber, should Congress sit idly by and allow this process to continue.

That is why I tried to conclude my testimony with four questions which I think Congress should face, and face very seriously. These rate-cost relationships do not really involve the question of who is subsidizing whom. You will notice that in my prepared statement the word "subsidy" is not used in any way, shape, or form.

The utilization of the basic switched network involves joint costs, and many quite-different services.

If I can take a homely analogy, it is a little like the problem of pricing the various cuts of beef. The meat is all produced out of the same process of slaughtering. The cost of steak and of hamburger are therefore not very different. But the prices are very different.

We do not say that the purchaser of steak subsidizes the users of hamburger. We say that the prices for the different cuts of beef are set in accordance with the elasticity of demand for the products, and that the different cuts of beef will be sold so long as the extra costs of providing the meat do not exceed the extra revenue brought in through their sale.

For a variety of economic and social reasons, we have developed a pattern of ratemaking in the telephone industry which has led to relatively low rates for the residential user. That policy may have strong economic justification from the point of view of the company in achieving the economic advantages of having a universal telephone system. It has great appeal as a matter of social policy to Congress and to the State legislatures, as we have heard this morning from Mr. Colter.

Congress should recognize it has to balance two or three sets of policy considerations in this field.

If Congress wishes to encourage the entry of manufacturers of equipment and providers of communications services around the periphery of the switched network, as the FCC has done, it must recognize that continuing that policy will have a cost. The cost will be that in all fairness the Bell System and other operating companies simply have to be allowed to respond competitively for areas of business which are very large and growing very rapidly, and therefore that there will be ripple effects on the whole rate structure.

On the other hand, if Congress says, "No, the maintenance of a system of rates which leads to comparatively low rates for the residential user is the policy we want to pursue," then it must conclude that the outer limits of what I have called here the integrated switched network, the natural monopoly of the telephone system managed by Bell, will be drawn somewhat more broadly than otherwise. Those are among the choices that I think Congress has to make, and I have been trying to bring out those choices as sharply as I could.

Senator KENNEDY. I think in part of your testimony you also talk about using the marginal cost pricing to permit cross-subsidizing in some of their competitive services with some of their monopoly services.

Mr. ROSTOW. Yes.

Senator KENNEDY. I think this is in an earlier part of your testimony.

Mr. ROSTOW. Well, I got into part of that.

Senator KENNEDY. Is this really in the public interest?

Mr. ROSTOW. Well, I mentioned the economic basis for that argument, which is now a very active and intense argument in many quarters, especially with regard to these new specialized communications services, in my response to your previous question. I do refer to that problem in my prepared testimony today, and you find the statement we made on the subject in the task force report at page 18. I think, of chapter six. There we said that a minimum price standard calculated with reference to long-run incremental costs for the particular service is the proper guide for the minimum price policy that the FCC should pursue, and that under those circumstances there is no subsidy.

There is an intense controversy going on that in many ways parallels the controversy which occupied the ICC for so many years as to whether marginal costs, incremental costs, should or should not be the benchmark for minimum prices in this field. Of course, the tragedy of the railroad system, and of the transportation system generally, is much in people's minds as they look at the problems of the FCC and the communications industry. No one wants to go down that road again if we can help it.

The problems of communications and transportation are similar in some ways and different in others.

Looking back at the history, I think the ICC does bear a considerable share of the responsibility for this tragedy. I think, in retrospect, that the particular issue which your question raises is one of the key mistakes that the ICC made, one of the key mistakes I am very anxious that the FCC should not repeat. The ICC set minimum prices too high, and set them on the wrong economic basis. Therefore, the Commission prevented the railroads from responding competitively to the development of trucking and the development of water shipment. And the ICC also forbade the railroads to own trucks, and so on. All in all the railroads were denied the possibility of a sensible business response to the new forms of competition that were coming and had to come. The net result was an uneconomic evolution of the railroad industry as compared to its rivals.

I do not think there can really be any claim that prices which cover true incremental costs, true variable costs, out of pocket costs, the additional costs of providing the particular service, are subsidized in any way. That common argument is like saying that a man who is competing with a rival who happens to have a rich wife has an economic disadvantage. We are talking about the use of resources. The general economic rule is that resources should be used so long as they bring in more revenue than the extra use costs attribute to the particular use.

You get into arguments about exactly how short-term variables should be measured. That is a normal decision a businessman takes every time he accepts additional business. So long as that rule is respected there is no cross-subsidization when it is not respected, when people try to set minimum prices too high, they are not only committing the overhead cost fallacy in economic theory, which would bring them an "F" in their examinations in the leading university in your State as well as in mine, Senator Kennedy, but they are moving in a way which interferes with the optimal use of resources and leads to uneconomic waste.

So I would say in answer to your question that so long as this rule is respected, the rule, that is to say, that the floor for minimum prices in this area should be the floor of incremental costs, then there can be no cross-subsidization. I think a great deal of the anxiety and concern on the subject has really not been about cross-subsidization, but about the economies for society of using a system which necessarily involves joint costs. The capital of the switched network does involve joint costs. It does offer society an opportunity to obtain new services at low incremental costs. From the point of view of society, we should not forego the advantage of that enormous investment.

Senator KENNEDY. Thank you very much.

Senator HART. The several signals that have disturbed us are to give notice that a vote is occurring on the Senate floor. We will briefly recess.

[A brief recess was taken.]

Senator HART. The committee will be in order.

I would like to ask just a couple of questions, more to get your reaction than to quarrel, and then I know that staff has a number of questions they would like to develop.

Early in your paper you say that as a method for dealing with the genuine economic problems of oligopoly and monopolization in the economy, the bill, S. 1167, is overbroad and unnecessary.

Putting aside the bill would you agree that we do have a problem with respect to oligopoly and monopoly in certain sectors of the economy.

Mr. Rostow. Yes, certainly. I have not made a recent survey to bring up to date the pages from that book of mine that I put in by way of appendix, so I would not today be prepared to testify as to the percent of the economy in different areas that involves oligopoly, but certainly, of course we have a problem of oligopoly, and in some areas probably an important one.

In our statistical approach to the problem I think we often miss

the forest for the trees for reasons that are very natural and understandable.

First of all, we use concentration statistics based on census data as to what percentage of the national wealth or what percentage of the Nation's industry is owned by the biggest corporations. Those statistics are important. They may even become ominous someday. But they have nothing to do with the problem of monopoly and competition in particular markets.

The second general reason for some confusion in our measures of monopoly is that we often tend to focus on compatible conditions within markets and fail to realize how much interpenetration of markets is developing, both through the development of transportation and through the use of substitute materials. Look at the building industry, for example. There used to be a list of two or three or four building materials. Now there it is a list of 25. Pipes are made from plastic as well as steel, tile, and so on.

I should say, then, that of course monopoly and oligopoly are important problems. Of course they are problems that we should concern ourselves with and keep up to date about. But my own guess is that in reality our economy is now a great deal more competitive than it was in the early days of the antitrust laws, when we had single firm monopolies in some of the basic industries of the country. We do not have that anymore. That is a huge achievement for which the enforcement of the Sherman Act deserves a great deal of credit. But, I would answer your question with emphasis, yes, monopoly and oligopoly are important questions.

Senator HART. Later in your paper you indicate that we have fully adequate Sherman Act doctrines for dealing with the genuine economic problems of oligopoly and monopolization.

Now, as you know, there are other people who express real uncertainty as whether the existing law reaches a share of monopoly or oligopoly. I take it that you believe it does.

Mr. Rosrow. I think so. I laid out two lines of analysis there. The first is the line of analysis in the *Paramout* case and the *Cement Institute* case. They are instances of group oligopoly; cases where a number of companies activity in parallel ways are treated as a combination. The second theory, which I think is much more powerful and discriminating is based on the line that stems from the *Socony Vacuum* and *Reading* cases, where a single company built up by mergers is treated as a combination in restraint of trade, violating section 1 of the Sherman Act. I am very pleased to notice that a recent article by Prof. Richard Posner of the University of Chicago takes a similar view of the cases.

I do not think the inhibition has been a doctrinal inhibition. It has been an inhibition, and once again a very understandable inhibition, on the part of enforcement authorities, of the Department of Justice, to say in a given industry, let us say the automobile industry, 5 or 6 years ago, before its recent volcanic troubles, that we should sue General Motors as a combination in restraint of trade, and break it up. What held the Department back, I think, was not a doctrinal question but a question of policy as to the wisdom of going down that road, taking a great many reasons into account.

Senator HART. Well, as you have indicated, the proposed bill would set up a new standard with respect to the single firm monopoly situation, and as you said, under existing law you use the word "conduct." There has got to be motive, abuse, or intent, some element of deliberateness in the acquisition of that power.

I will phrase this, if I can, in a way to elicit a yes answer. I am not sure I will get it. Where there is monopoly power why do we need anything in terms of consciousness, intent, or anything else; why should public policy not be simply to dissipate the power, no matter how important? Should that be the policy?

Mr. ROSROW. Your question raises two sets of problems, I think. First, the problem of interpreting and applying the Sherman Act. It is among other things, a criminal law, as Judge Hand pointed out in his famous Alcoa opinion which remains one of the finest in the field I think; and second, there is the problem of policy: Should all monopolies ipso facto be abolished if we can do it?

I take it your question is really addressed to the second half of the problem.

Senator HART. It reminds me to point out for the reader of the record that the bill is not a criminal statute.

Mr. ROSROW. Yes, I noticed that. Throughout my testimony I tried to observe that distinction very carefully. I think there are situations of monopoly where we should say, "Well, we really have no alternative," the way the Supreme Court did in the old *St. Louis Terminal* case.

There was no feasible way to build another railroad terminal in St. Louis, and it would have been stupid to break it up. The other lines could not build terminals of their own. Therefore, the Court said we will treat the terminal as a utility and say in effect that all the railroads have a right to use it. In answer to your question, then, I should say that policy ought to take an active interest in situations of presumptive monopoly and oligopoly. I have no objection to such a policy. Indeed, I favor it. You will recall that that was the recommendation of the Attorney General's committee in which I was quite active 20 years ago.

I am a great believer in nine-tenths of that report. We urged the Department of Justice to do some serious economic planning so that it could bring cases not only in response to complaints, because many of the cases they bring are not very important, but could address themselves to the genuine problems of monopoly in the economy on the basis an analysis of where the real bottlenecks are.

I believe that situations of monopoly should be studied and scrutinized under the antitrust laws, but not in a flat rule that they should be broken up as a matter of routine. I should say, even if I agreed with the measures of monopoly which are proposed in your bill, which I do not, I should be hesitant to go that far. The bill covers local markets as well as national markets. It provides a universal test. Under the existing law, if the Department of Justice does some serious economic planning about how best to use its antitrust resources, it can pick the cases that really matter to the economy as well as deal with the squeaky wheels.

The approach proposed in the bill goes far beyond such a program. The bill covers all situations defined as those of monopoly, and would involve the seven great areas of the economy specifically mentioned. It is too much to call those areas industries. The headings go industries. For the law to require 15 years of intense investigation of these huge areas of the economy, winding up with plans for structural reorganization, which would have a momentum of their own through the Commission, through the courts and so on, seems to me to do far more than is warranted by the nature of the problem. I do not deny the importance of that problem. But I think the bill is—well, the word I chose was “overbroad,” recalling, of course, some recent Supreme Court opinions. The bill would absorb the whole of main American industry in an exercise of investigation and soul searching, which I think would go beyond what is really indicated.

Senator HART. Could I persuade you to agree tentatively, at least, that whether or not we went as far as this bill does, that we preserve that feature of the bill that—it is in section 203(a) (2) through (4)—creates a Commission to study the structure and performance, control, and then we list the seven industries. We then go on to say that the Commission shall develop a plan for determining whether or not a corporation is in violation of title I, and in developing a plan the Commission shall determine the maximum feasible number of competitors at every level, and degree of vertical integration, ease of entry and so on, and it shall study the collective-bargaining practices in each and determine the effect of these practices on competition. Then, it shall report to the Congress each odd numbered year and make recommendations, including legislation, as it deems desirable. The recommendations would include antitrust law amendments, IRS, patent law, NLRB, Labor Relations Act, and the Commission may also report on the effect on competition of the policies of executive and regulatory agencies' recommendations.

Now, this would provide us in the Congress with some basic information that we do not get. It also might be needed to produce the kind of reform of regulatory bodies that you suggested, which, incidentally, is a lot tougher than busting up GM.

Mr. Rostow. It sure is.

Senator HART. Would this kind of orderly development of studies, reports, and legislative suggestions be worthwhile?

Mr. Rostow. Let me qualify my answer. My answer would be “Yes” if we could agree on a certain revision of your question.

First do we need a new body, or could we entrust the studies to the Federal Trade Commission, which has important statutory powers to conduct studies, and which has made extremely important studies in the past? I should certainly say that in the interest of economy and simplicity we should use the Federal Trade Commission rather than create a new body, for the reasons I testified to a little while ago.

Second, should the studies to be undertaken be addressed to the importance of the problems of monopoly and competition in various sectors of the economy or should the Commission be directed in each case to come up with a plan of structural reorganization? That

provision in the bill, it seems to me, immediately arouses all fears and sets in motion a process which has a momentum of its own. It may be that in some of these industries that kind of reaction is just what you do not want, and that what you do want is something quite different.

Third: About the list, I am not prepared now to say whether those seven areas of the economy are the ones which suffer from the most acute and important problems of oligopoly and monopoly. I am not prepared to say they are not, either. The problem keeps changing. You surely get into problems of oligopoly and monopoly, for example, in the field of energy. Well, energy is going through revolutionary change. The coal industry is going to come forward. We are going to have some new energy industries in no time at all, all kinds of problem of interpenetration. I would not confine a study program, therefore, to that particular list. Rather, I should urge that Congress direct an appropriate agency to conduct studies of the monopoly problem, and its importance, and ways and means for dealing with it, both in general and in particular industries. We certainly should get an authoritative report, backed by good research work, on whether the degree of monopoly in the economy is increasing or decreasing, and if so how, and in what respects? I should strongly favor steps of that kind.

Senator HART. Thank you very much.

Mr. O'Leary?

Mr. O'LEARY. Dean Rostow, a number of witnesses have alleged that the marketing personnel in various Bell operating companies have engaged in economic reprisal after a customer has purchased telephone equipment from a competitor.

If those allegations are true, is that a violation of existing law?

Mr. Rostow. Well, in the antitrust laws, of course, we have a long line of cases in individual and collective refusals to deal. The principle of the *Colgate* case has been pretty substantially eroded. It remains as a naked principle which the courts will always respect. But if there is a pattern of reprisal against companies which deal with competitors I would be quite sure that there are existing remedies, both tort remedies and antitrust remedies. Now, I hasten to add that in the course of my study of the Bell System in preparation for these hearings I never found anyone who told me that he went around and engaged in reprisals. I am not an expert on whether these things happen. I am an expert—I have had a lot of experience, at any rate—with running down rumors, and I have seen a great many rumors, that seemed very circumstantial, evaporate. I would not offer a statistical guess about the factual basis for your question. But the simple answer to your question is "Yes." There are both private tort and antitrust remedies for a pattern of reprisal.

Mr. O'LEARY. What about a situation where the marketing personnel of a common carrier threaten economic reprisal prior to a customer's decision as to whether or not he should purchase his own equipment, and that the customer decides not to purchase that equipment, but to continue to lease from the common carrier?

Would that be a violation?

Mr. Rostow. Oh, yes. That is the same problem really. A threat to do something is almost as bad a tort as actually doing it.

Mr. O'LEARY. Dean, I would like to get your reaction to an exhibit which was introduced into the record at a previous set of hearings. The covering sheet is a memo from Michigan Bell Marketing Division's commercial manager to a number of district commercial managers for cities in western Michigan. As you can see, the memo is short and reads as follows:

During the year 1971 Western Electric purchases within Michigan amounted to \$31,266,729, 1,452 firms. Attached for your information is a list of the individual suppliers and amounts of money spent in cities and towns in the southern area.

In addition to your use of this information, your market coordinator may find this helpful when recommending the sale of our service in a competitive situation.

Now, what purpose can that memorandum serve, other than to enable Michigan Bell marketing people to use or threaten economic reprisal?

Mr. Rostow. Oh, I should think there would be a number of others that would strike me at once if I were dealing with a marketing situation in which there was competition. I do not think the inference of reprisal would necessarily be the only one that would rise to my mind, or necessarily the most persuasive inference to check out. If the salesman is facing a lot of competition in the sale of services I do not think it would be a tort or a crime or a violation of the antitrust laws for the fellow to remind his customer that Western has been his customer, so long as it did not involve threats.

Now, what is Mr. Lawford divisional commercial manager of? Is this Michigan Bell or whatever the Bell company up there is called?

Mr. O'LEARY. That is correct.

Mr. Rostow. In other words, he would not have any immediate responsibility for threatening the withdrawal of the Western Electric business, anyway. It would just sort of emanate from the woodwork, I suppose.

No; I should think it would be a legitimate asset in a competitive situation for a salesman to be able to remind his potential customer of an advantageous business connection. The line between good salesmanship and tie-in connections is a line that would have to be explored factually. I would not regard this document as a particularly damning piece of evidence offhand, of itself. It certainly could be. If in context you develop some evidence indicating it was a part of a pattern of threatening reprisals in order to keep business, that is another matter. But the document itself does not seem to me necessarily to give rise to that kind of inference.

Mr. O'LEARY. Well, would you agree that making reference to the amount of Western's purchases raises serious antitrust implications in a situation where Bell marketing personnel in a competitive situation may remind the customer how much Western—

Mr. Rostow. Only if there is a threat of reprisal. After all, if Western was buying from these companies, presumably it had a reason to buy. It may have been a unique source of the product. A little back-scratching is not necessarily criminal. It could give rise to a situation of tort. There is no doubt about that. But in itself, saying

you might be interested in knowing when you go out to sell your services that these fellows have been doing a profitable business—

Mr. O'LEARY. Dean, in your statement you describe how the task force, in chapter 6 of its report, came to the conclusion that vertical integration was essential in domestic telecommunications.

Mr. Chairman, I wonder if we could put chapter 6 into the record. Senator HART. Without objection.

[Chapter 6 of the report referred to appears as exhibit 23 at the end of Mr. Kelly's oral testimony, p. 3244.]

Mr. O'LEARY. In your statement you indicate that the weightiest reason for this conclusion comes, I believe, on page 42 of chapter 6.

Mr. ROSTOW. I said that reason appear at 42. Well, the reason said "appears" is a very simple one, as I tried to explain when I was giving the testimony earlier. It was not easy to reach agreement on the substance and the language of the report as is usually the case as with an effort involving 16 people and their staffs. There were a great many controversies going at once, and there were nuances of difference among members of the task force on important questions, including the question of the consent decree of 1956.

As I tried to make very, very clear this morning, on this set of problems I was testifying to my own views and what I believe was the consensus of a large majority of the members of the task force, my own views at the time and now, against the background of the history of the report and the tough job of getting it out, the normal struggles in the final stages to find formulae and words that would be satisfactory, or not too difficult for several of the members. That is why I used the word "appears."

I did not mean to say that the issue comes out as sharply in the report as it did in my testimony. It did not. That is the reason I characterized the passage in the report with the word "appears." I said that the basic force behind the general consensus on the question of vertical integration was an awareness of the importance of the process of innovation in the way in which the Bell System had developed over the years, in response to that.

It took us a long time, many, many studies, and memorandums, and hours of debate before we reached that conclusion. But the report spells out the conclusion in ways which are peculiar to the history of the group effort, as is altogether normal for such things.

Mr. O'LEARY. Is it not fair to say that the task force failed to take a position on the economics of vertical integration?

I have in mind a reference to a specific paragraph on page 40 of the report, which reads as follows:

Dissolution of the ownership ties between Bell and Western Electric has sometimes been suggested as the best way of obtaining the full benefits of diversity and competition for the industry. In view of time constraints, we have not had the opportunity to study this question in depth or to evaluate critically the arguments that an extensive degree of vertical integration is necessary. On the basis of the limited studies which our timetable has permitted, we are not in a position to make a firm recommendation of the question one way or the other.

Mr. ROSTOW. That is exactly, the passage I had in mind when I presented my testimony this morning and made my remarks just now in response to your previous question.

Let me add two things to what I have already said about the problem of vertical integration in the task force report. First, on the concept of the integrated switched network which runs through this part of the report as its central theme, there was never a time, I think, subject to the usual vagaries of memory, that I can recall at this moment no debate and no strong contention within the task force for breaking up the Long Line system or breaking up the network into its component parts.

Secondly, what I referred to this morning as a ticklish problem in drafting acceptable language concerned something quite specific. The key issue of debate that led to the language on page 40 was a strong effort within the Department of Justice—I suppose there is no reason of history not to disclose it now—to try to reopen the consent decree. The members of the Department of Justice knew that there was no possibility of the task force supporting that effort. The question was how to state the conclusion, which as I said, I believe, represented not only my own final view of the matter then, but the view of a very large majority of the members, in a way which would avoid dissent and maintain consensus, which was important for a great many other reasons.

So we said we make no commitment on that issue, we haven't had enough time. And, of course, we expressed no opinion about the legal issues. The Department of Justice, content with that, went along.

That episode is the reason I gave the page references to various parts of the report in my testimony this morning, because of that episode this underlying debate surfaced in various forms on those pages. And I have tried very carefully to testify as to my own view on the subject, and the view which I believe represented that of the majority of the group. That was the reason for the care with which I presented the issue this morning.

Mr. O'LEARY. In your prepared testimony today you state as follows:

In negotiating the consent decree the Department of Justice had reached the conclusion that the basic ownership structure of the system should not be changed. That is, where research and manufacturing capacities were necessary to the fulfillment of the primary mission of the Bell System, as the organizer, manager, improver of the Americans' telecommunications network.

During our hearings on S. 782—Senator Tunney's consent decree bill—we received testimony from one of the attorneys involved in that litigation, Victor Kramer. And he alleges that that settlement was negotiated between then Attorney General Herbert Brownell at White Sulphur Springs, W. Va. He also makes reference to a portion of a memorandum written by T. Brooke Price, A.T. & T.'s general counsel at the time, which describes the event. I would like to read a passage of it.

Brownell reflected a moment and said, in substance, that a way ought to be found to get rid of the case. He asked me whether, if we reviewed our practices, we would be able to find things we are doing which were once considered entirely legal but might now be in violation of the antitrust laws or were questionable in that respect. Consequently, he thought we could readily find practices that we might agree to have enjoined with no real injury to our business.

I said that our management had not been willing to so admit that any injunction ought to be entered against the company, but they felt that the case ought to be dropped. He said, "I don't think that is a very sensible attitude for them to take." I said, "They are sensible people, and they will give this matter further consideration."

As I got up to go, he walked down the steps with me and repeated his statement that it was important to get this case disposed of. He said the President would understand this also, and that if a settlement was worked out "you could get the President's approval in 5 minutes."

My question is, do you think that the Department of Justice really went through the analysis of the vertical relationship between A.T. & T. and Western which one could infer from your statement?

Mr. ROSTOW. Victor Kramer is an old and dear friend of mine, and I have not read the testimony before Senator Tunney. But what you have read is very much like the material that appeared in the original Celler hearings on the subject. As I remarked in my prepared statement, we were aware of the criticisms of the consent decree when we drafted the report. I do recall both Victor Kramer's testimony and that memorandum.

When I used the word "Department of Justice," in my prepared testimony it was fresh in my mind that it was the Attorney General who reached the conclusion. And I assume, in the nature of things, that he speaks for the Department of Justice.

He reached the conclusion that the basic ownership structure of the system should not be changed, and that is all I meant to attribute to the Department of Justice. And I think that my statement is accurate.

I was thoroughly aware of the fact that there were many highly respected members of the Department of Justice staff who were extremely unhappy about the Attorney General's decision, then and later. So I stand on my testimony.

Mr. O'LEARY. Dean, in chapter 2 of the task force report you came down strongly in favor of a proposed monopoly international carrier.

Mr. ROSTOW. Yes.

Mr. O'LEARY. But you also put in some conditions, one of which was a prohibition against vertical integration in manufacturing.

Mr. ROSTOW. That is right.

Mr. O'LEARY. On page 41 of chapter 2, the majority stated:

We have already stressed that a public utility monopoly should be confined to the functions which in their nature require unity of operation. Diversity of approach is an important factor in successful innovation. Accordingly, the creation of a monopoly of international transmission makes all the more vital preservation of competition at other levels, such as manufacturing.

Why is this different?

Mr. ROSTOW. Why is this different?

Mr. O'LEARY. Good internationally policy but not domestic?

Mr. ROSTOW. Well, for a very simple reason. Because the resources of Western Electric and the Bell System would be available to the international monopoly as one among other sources for cables and other transmission methods and switching methods. That was very much in our minds.

As a result you would have an international monopoly that could draw on a very strong and powerful set of institutions, both at home

and abroad, for its communications equipment. We had in the forefront of our thinking the astonishing new developments with cables that were going on then, and they are going on still. Remember, our basic problem was to try to find a way out of the compromises in the 1962 Communications Satellite Act, which we felt were obstructive. As I said this morning, we found that there was simply a division of business on an ad hoc basis between cables and satellites, an absolutely impossible prospect, therefore, for rational investment decisions. So we could make our proposal for the international entity very easily because it did not in any sense threaten the innovation capacity of the Bell System for innovation, on which we were relying for at least one strong flow of ideas and machinery, and so on, for the future equipment of the international entity. It was a totally different animal from the situation that would emerge if the domestic system were broken up.

Mr. O'LEARY. Dean, recently Mr. deButts has said that we should have a moratorium on economic experiments with competition. Many of us have speculated on what exactly he means. But if that means that we should have no competition with respect to specialized common carriers or terminal equipment manufacturers, that we should return to a system of franchised monopolies subject to strict regulation, is that your position?

Mr. ROSSOW. No. I tried to put my position in terms of my own analysis of the problem as best I could today. I have not tried to relate it to Mr. deButts' position.

I should say that our first problem is to define the scope of the regulated monopoly. Everybody has agreed that there is and should be a regulated monopoly for some part of the national communications system, or at least most people do. But they disagree as to how far that area of regulated monopoly goes, and should go.

I tried my best today to define how much is involved and implied by the existence of the switched network. In an era of shortages, in an era of inflation, in an era when we really are going to have to economize in our use of resources, I firmly believe that the switched network should be used as economically as possible for all the services which it can provide.

Beyond that, how far should the switched network be protected against competition as a regulated monopoly will depend on the interaction of a good many forces. We have had a few years of rather enthusiastic experiment with allowing entry both into the interconnection field and the specialized communications services. We have the unedifying spectacle of both the FCC and some of the companies fighting fiercely to postpone, delay and mitigate the competitive responses of the Bell System to their entry. This, it seems to me, is a scandal.

And in certain areas, the *Dataphone* case and others, it is really an outrageous way to behave.

As I tried to say in response to a question from Senator Kennedy, how we draw lines is going to depend upon how Congress in the end balances a number of policies. The extent to which Congress wants to preserve the historic pattern of relatively low rates to the house-

hold subscriber is one such policy. Congress has to recognize—and our experience brings it out very sharply—that a policy of enthusiastic entry can lead not only to overbuilding capacity and a waste of resources in that sense, but also to consequences for the rate system as a whole. Those consequences have to be faced.

Now, I would not come out and say, therefore, “a moratorium on competition,” or “eliminate competition,” because, as I said in the concluding part of my prepared statement, looking back at the relationship between the antitrust laws and regulated industry, nobody has ever been able to present the pressure of antitrust scrutiny in regulated industries—in banking, railroads, shipping, and so on. And we are not going to do it now.

My plea is a somewhat different one, not that we draw a line around the monopoly and say no competition whatever—because communications is much too dynamic an industry, changing much too rapidly for any such attempt to succeed, in my judgment—but that we should try to develop strict rules about how far we want to go. Above all, as I suggested, I think Congress could well consider codifying the principle of what I call the unitary national switched network for public message service as an important component of the public interest to guide the FCC, because I think that is, in my judgment, the present law of the subject, and I do think the FCC has deviated from it in a number of ways.

Mr. O'LEARY. Is it fair to say that your testimony here today does not represent a backing away or second thoughts about the basic conclusions and recommendations of the 1968 report?

Mr. ROSTOW. Oh, not at all; not at all.

Mr. O'LEARY. Thank you.

Thank you, Mr. Chairman.

Senator HART. Mr. Chumbris?

Mr. CHUMBRIS. Thank you very much, Mr. Chairman.

Dean Rostow, Senator Hruska wanted me to express in the public record his regret in not being here. He was committed this morning to a meeting of the Appropriations Committee, of which he is the ranking minority member, and Secretary Kissinger was there as the witness this morning. Although he couldn't hear your statement and be here to visit with you, he has read your statement and he is delighted with it, because as Senator Hart well knows, Senator Hruska does not agree with the bill, S. 1167.

He feels that the system that we have, as you have related it here this morning, is an excellent one and that if there are any weaknesses in it we should try to improve it in that light, within the system and not by way of S. 1167.

I also would like to extend my greetings. We have been together at about three or four major hearings since 1961, and it is always a joy to have you with us.

Mr. ROSTOW. Thank you very much, and please thank the Senator for his very kind and courteous greeting. I have always enjoyed meeting with him and the other members of this committee on my various visits here, both in private and in public capacities.

Mr. CHUMBRIS. Mr. Chairman, I would like to place in the record a copy of S. 3580, introduced by Senator Magnuson, and referred to today by Dean Rostow.

Senator HART. The bill will be received for the record.

[The bill referred to appears as exhibit 4 at the end of Mr. Rostow's oral testimony.]

Mr. CHUMBRIS. Thank you.

Senator HART. Dean, all of us have enjoyed you, and again, thank you.

Mr. ROSTOW. Thank you very much.

Senator HART. Let us recess until 2:45 the afternoon.

[Whereupon, at 1:40 p.m., the subcommittee recessed, to reconvene at 2:45 p.m. this same day.]

[The following was received for the record. Testimony resumes on p. 4062.]

MATERIAL RELATING TO THE TESTIMONY OF EUGENE V. ROSTOW

EXHIBIT 1.—*Attachments to Prepared Statement of Mr. Rostow*

Attachment A

BIBLIOGRAPHY OF PRINCIPAL PUBLICATIONS OF EUGENE V. ROSTOW IN THE FIELD OF ECONOMIC POLICY

- "Bituminous Coal and the Public Interest." Yale Law Journal, vol. 50, pp. 543-594, and pp. 613-620, February, 1941.
- "The New Sherman Act: A Positive Instrument of Progress." Univ. of Chicago Law Review, vol. 14, pp. 567-600, June, 1947.
- A National Policy for the Oil Industry (3rd ed. 1948)
- "Monopoly Under the Sherman Act: Power or Purpose?" Illinois Law Review, vol. 43, pp. 745-793, January, 1949.
- "A Reply," Journal of Political Economy, vol. 57, pp. 60-68, February, 1949.
- "Problems of Size and Integration," Symposium, Business Practices under the Antitrust Laws, Commerce Clearing House, 1951, pp. 117-134 (Reprinted in Dunn and Van Cise, "How to Comply with the Antitrust Laws") (Commerce Clearing House, 1954).
- "Entry Into the Oil Refining Business," (With Arthur S. Sachs), Yale Law Journal, June-July, 1952, vol. 61 pp. 856-914.
- "Market Organization and Stabilization Policy," In Millikan, Ed., Income Stabilization for a Developing Democracy (Yale Univ. Press, 1953) pp. 439-514.
- "Britain and Monopolies, An American View," Manchester Guardian, February 16, 1953, pp. 4, 5.
- Report of the Attorney General's Committee in Perspective, Antitrust Law Symposium 1956 (Commerce Clearing House, 1956), pp. 64-75.
- Testimony before Antitrust Subcommittee, House Judiciary Committee, 84th Congress, 1st Session, *Current Antitrust Problems*, pp. 1920-1942 (1956).
- Planning for Freedom, The Public Law of American Capitalism, (Yale Univ. Press, 1959).
- "To Whom and For What Ends Are Corporate Managements Responsible?" in E.S. Mason, Editor, *The Corporation in Modern Society* (Harvard Univ. Press, 1959) pp.46-71.
- "British and American Experience With Legislation Against Restraints of Competition," 23 Modern Law Review, pp. 477-506 (1960).
- Statement before Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, on S. 1552, December 7, 1961, reprinted 6 Antitrust Bulletin, pp. 606-634 (1961).
- "The Ethics of Competition Revisited," 5 California Management Review, pp. 13-24 (1963).
- "A Communications Policy for the '70s," 8 Television Quarterly, pp. 47-56 (1969).
- "Principle and Practice," an address before a convention of the Canadian Cable Television Association, May, 1973.

Attachment B

"PLANNING FOR FREEDOM" (PAGES 272 THRU 274)

11. Some Notes on the Law of Market Organization

This chapter is an exercise in perspective. It offers some descriptive background, of possible assistance to nonlawyers, although it does not attempt to put the law of markets into a proverbial nutshell. Principally, it proposes to define a few major features of the process through which the law seeks to carry out its politics for the organization and conduct of markets.

The larger part of the economy, involving activities which originate approximately 75 per cent of the national income, are subject to the antitrust laws as private business, largely affecting interstate commerce and not directly regulated by government through administrative agencies. This estimate follows the interesting observations made by Messrs. Wilcox, Nutter, and Stigler a few years ago.¹ Something like one-third of the companies in this sector, originating perhaps 20-25 per cent of the national income, can be classed as private monopolies or oligopolies. Unresolved questions of antitrust policy, of varying degrees of seriousness, are raised by the structure and behavior of these industries. According to Nutter's study, some 40 per cent of manufacturing production was accounted for by effectively monopolistic industries during the thirties. This percentage may be slightly higher now, as a result of subsequent mergers; but the increase has in all probability not affected the figures by more than a few percentage points at most. If one uses the measure of persons engaged in production in the business sector of the economy, excluding government, nonprofit organizations, and the like, Stigler's estimate for 1939 is that 76.5 per cent of the work force was in competitive industries, 19.7 per cent monopolies, and 3.8 per cent in compulsory cartels, a classification that includes airlines, highway transportation, the dairy farmers, and at that time, bituminous coal.²

Controversy has raged in recent years as to whether the monopoly sector of the economy is increasing or decreasing in size. It is reasonably clear by now that the degree of monopoly in American business is substantial, and worth talking about, but that it has changed only slightly since 1900.³ The influences weakening monopoly have for some time roughly balanced those which favor it. Many forces make for increasing competition in the economy. The development of transportation has opened local markets to wider and wider zones of competition, and to penetration by new methods of distribution. It has also permitted labor to move more freely and thus to reduce the power of local employers in their protected labor markets. The multiplication of substitute commodities and services, too, has been a force mitigating monopoly influence in many situations of importance. And the flexibility of many companies in switching from the manufacture of one commodity to others has sometimes helped. The railroads, to take a familiar example, do not have the immense monopoly power of their position fifty years ago. Steel, coal, and many other products face an array of competitive pressure from substitutes—aluminum, oil, plastics, glass—which has transformed their status. The slow influence of the law has not been unimportant, through enforcement efforts, the development of judicial doctrine, and the improvement of the statutes themselves. On the other hand, the attractions of arrangements to reduce competition are always real, and they have from time to time been encouraged or at least tolerated by the state. The popularity of mergers in recent years has been significant in this connection. It has been stimulated by many factors, including the capital gains and other features of the tax laws, and the weakness, until 1957, of Section 7 of the Clayton Act.⁴

Enough careful studies of the history and structure of industries are already available to permit one to discuss the plausible proposition that competition

¹ Clair Wilcox, *Competition and Monopoly in American Industry*, TNEC, Monograph 21 (1940); G. Warren Nutter, *The Extent of Enterprise Monopoly in the United States* 9, Chicago, University of Chicago Press, 1951; George J. Stigler, *Five Lectures on Economic Problems* (New York, Macmillan, 1949), lecture 3.

² Stigler, p. 50.

³ See Nutter; M. A. Adelman, "The Measurement of Industrial Concentration," *Review of Economics and Statistics*, 33 (1951), 269, and "A Current Appraisal of Concentration Statistics," *Journal of the American Statistical Association*, 53 (1958), 568.

⁴ 38 Stat. 730 (1914), 15 U.S.C. (1952).

is dead or dying; that monopoly is technologically inevitable; and that efforts to achieve more competition in many industries, including some of those now subject to direct regulation, are futile or worse.⁵ If the argument of the preceding chapter is correct, competition can make a greater social contribution in an economy of stabilized full employment and rapid growth than at any other stage of the trade cycle. Under such circumstances, programs for removing restraints on competition offer much, both in themselves and in providing a favorable setting for labor negotiation. The presence of high monopoly profits is inevitably an invitation to extreme wage demands. The maintenance of competitive levels of profit in industry is a necessary if not a sufficient condition precedent to obtaining tenable wages from the system of collective bargaining.

The law does not, however, take the simple view that the objective of national policy is competition *a outrance*. Nor does it even go so far as to demand all the competition of which the economy is capable. The law of markets includes, of course, the Sherman Act and a considerable mass of related statutes, which purport to forbid a variety of acts in "undue" or "unreasonable" restraint of competition. But the American law of markets has other panels. In the field of labor, for broad social reasons, it encourages the formation of trade unions and the process of collective bargaining, in order to redress the historic inequalities of labor's bargaining position.

Attachment C

"PLANNING FOR FREEDOM" (PAGES 297 THRU 307)

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larly, the proprietor of an area's only newspaper in which local merchants were virtually forced to advertise, was held to have violated the law by refusing to accept advertising from those who advertised on a radio station.⁵⁶

This cycle of decisions suggests a doctrine that threatens the existing structure of several large industries in the United States. In many fields, two or three or four big companies occupy crucial market positions. Together, they produce 60 or 70 per cent of the particular product. They follow each other's prices out of self-interest and without overt agreements. Each one knows that any move on his part would provoke a response from the others, and that a price cut could not change his share of the market. Hence, prevailing policies in such markets are those of price leadership, on the one hand, and advertising and other marketing efforts, on the other. There is competition not through price reductions but through increases in cost. Each seller has an equal distaste for what he calls "cut-throat competition," an equal interest in the policy of "live and let live." When an industry is organized in this way, price, output, and opportunities to enter the field are akin to those which would obtain under conditions of monopoly; in many instances the amount of social waste involved may be greater than that which would prevail under conditions of monopoly. The ordinary consequences of the market structure is that the dominant large companies, if they have a decent regard for their own interests, will act as if they had combined, even though their officers may never have talked to each other, even on the phone or the golf course. The market power of the dominant group is used collectively—pooled, in fact, for price purposes.

This pattern represents the expected norm in situations where a large part of market supply comes from a few large firms. The dynamic elements in this model are altogether familiar in practical life. They often appear in the guise of information programs, customs of price leadership, nominal product differentiation, and other devices whose function is to reduce uncertainty and build up consumer loyalties and preferences moderately insensitive to price.

Oligopoly does not always take so cooperative a form. For one reason or another, great uncertainty may prevail, or be encouraged by public action. A member of the group, for example, may be a congenital maverick, like Ford, Firestone, or Pew. Uncertainty about his policy and about the expected re-

⁵ A most useful, revealing, and judicious appraisal of the economic consequences of anti-trust appears in Simon N. Whitney's study, *Antitrust Policies: American Experience in Twenty Industries*, 2 vols. New York, Twentieth Century Fund, 1958.

⁵⁶ *Lorain Journal Co. v. United States*, 342 U.S. 143 (1951).

sponses of the other rivals to his policy may throw the whole group's conditioned reflexes askew. It is hard to play the game sensibly if a different card, quite announced, becomes wild with every deal. In markets of this kind it is easy to understand, if not to sympathize with, the aversion businessmen feel for the "price-cutter," the "chiseler," the "unethical" seller who engages in price competition and thus "spoils" the market for all.

Two possible lines of approach to the problem of "cooperative oligopoly" are emerging from the decisions of the Court. One would be to deal with the cooperating group as a "combination" or "conspiracy" monopolizing the trade, in violation of Section 2 of the Sherman Act. The other would be to bring suit only against the one of two giant companies in the field, individually, as "combinations" in continuing restraint of trade, offensive to Section 1 of the Sherman Act.

The first approach, that of collective monopolizing, would follow the lead of *American Tobacco Co. v. United States*⁵⁷ and *United States v. Paramount Pictures, Inc.*⁵⁸ In both those cases, the "major" companies in an industry of the few were found to have joined together informally and without express agreement, in consciously making parallel decisions as to important aspects of their market policy. The evidence of "combination" accepted by the courts was in most respects indistinguishable from the kind of behavior to be expected in a situation of rational, well-established, well-informed, cooperative oligopoly. The effect and result of the companies' parallel action was to give the group a considerable degree of power over the price they charged and over the possible entry and prosperity of new and old rivals in the field. That power was treated as on a par, legally, with the power exercised by single firms in cases like *United States v. Aluminum Company of America* and *United States v. United Shoe Machinery Company*.

The Court has warned about the limits of such proofs. It is always good evidence of combination or conspiracy to show that in a situation of oligopoly the defendants behave in uniform and parallel ways, as if they had tacitly agreed to coordinate their price policy. If, on the basis of such evidence, a jury, a lower court, or the Federal Trade Commission finds that the defendants have reached an understanding, that finding will not be disturbed on appeal. On the other hand, guilt and responsibility under the law must be individual, and not imputed by association, or even without it. If the trial tribunal is satisfied, despite such evidence, that the defendants' decisions were independent and not collective, and did not stem from a collusive agreement, tacit or express, the appellate courts will not usually reverse that finding of fact.⁵⁹

It is an open question whether the Supreme Court would now apply the precedent of the *Paramount* case to order the competitive realignment of a major oligopoly industry, where market power is shown to be shared by a small group and used in common to minimize uncertainties and avoid price competition. The doctrinal basis for such a suit is well established. Several industry-wide cases now pending raise the issue. They may soon settle it.

The second legal approach identified above—that of suing a single large firm as a "combination" under Section 1 of the Sherman Act—may well turn out to provide a simpler and more discriminating means for increasing the degree of competitiveness in many situations of oligopoly. The theory of actions of this kind would build on the word "combination," in Section 1 of the Sherman Act. That section makes illegal "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several states, or with foreign nations." The scope of the word "combination" in this setting, as distinguished from "contract" or "conspiracy," has never been seriously considered. It is clear, however, that for more than fifty years the idea of "combination" in this section has been called into play not only by "trusts" in the form of trusts, but also by "trusts" established through

⁵⁷ 328 U.S. 781 (1945).

⁵⁸ 334 U.S. 131 (1948).

⁵⁹ *Theatre Enterprises, Inc. v. Paramount Film Distributing Co.*, 346 U.S. 537 (1954). See also *Eastern States Retail Lumber Dealers Ass'n. v. United States*, 234 U.S. 600 (1914); *Interstate Circuit, Inc. v. United States*, 306 U.S. 208 (1939); *Federal Trade Commission v. Cement Institute*, 333 U.S. 683, 716, n.17 (1948). See Report of the Attorney General's National Committee to Study the Antitrust Laws, pp. 36-42; M. Handler, "Annual Review of Antitrust," *The Record*, 10 (1955), 332, 343.

mergers, holding companies, and other devices which achieve a permanent or semipermanent association among competitors.⁶⁰ Any company whose history includes an episode of merger therefore faces the risk that it is a "combination" for purposes of Section 1 of the Sherman Act, and a perpetual, standing, and and incurable "combination," to boot. The mark of Cain is upon it.

Next, the argument would proceed to the words "restraint of trade or commerce," in Section 1 of the Act. This phrase defines an offense different from the "monopolization" condemned by Section 2. The *Standard Oil* case of 1911, at the Attorney General's Antitrust Committee recently interpreted it, viewed "restraints of trade and monopolization as two phases or degrees of the same phenomenon."⁶¹ Both at common law and in ordinary speech, the Court had said, the words "monopoly" and "restraint of trade" referred to situations where competitive conditions were "unduly" limited. The two sections of the Act were therefore interpreted to supplement each other, in the interest of making the prohibitions of the Act all-embracing, whether the forbidden end—monopoly—was achieved, partially achieved, or merely sought, and whether it was pursued by a single entity or by a group. In two leading cases of great importance it was decided that groups of sellers acting in concert had "restrained trade" in violation of Section 1 of the Act, by significantly influencing prices, although they were expressly found not to have "monopolized" by conspiring to fix prices and to dominate the market.⁶² The power they had over price in the market, while significant enough in each case to support the conclusion that they were violating Section 1, fell short of the quantum required to justify a finding of monopoly, for purposes of Section 2. Section 2 of the Act calls for a higher degree of monopoly power than Section 1, just as the Clayton Act deals with lesser degrees of monopoly power than either section of the Sherman Act. In Judge Learned Hand's phrase, certain contracts in restraint of trade within reach of Section 1 are "only steps towards that entire control that monopoly confers: they are really partial monopolies."⁶³

This line of reasoning would recognize the final burial, even in the most technical sense, of the Supreme Court's famous opinion in *United States v. United States Steel Corp.* That decision has been discredited, qualified, and ignored, and its incidental philosophy has been repudiated. But the exact issue decided there has never been squarely confronted again, save in *United States v. Socony Vacuum Oil Co., Inc.*⁶⁴ In its *Steel* opinion of 1920, the Supreme Court treated the case as if the charge were realized monopolization rather than combination in restraint of trade or as if the two issues were the same. The Court agreed that the holding company had been formed for the express purpose of monopolizing the industry, and that for a while it came close to doing so. But the Company's share of the market dropped. It could not control prices save by devices of collusion. It provided only half the market supply, and lacked the power of monopoly as "a continually operating force." "Whatever there was of wrong intent could not be executed; whatever there was of evil effect was discontinued before this suit was brought, and this, we think, determines the decree."⁶⁵ The dissenters protested that in a case of combination or conspiracy it was erroneous to require complete monopolization. "To insist upon such result would be beyond the requirements of the statute and in most cases practically impossible."⁶⁶ The manifest influence of the United States Steel Corporation in the steel industry of 1920, they thought, was "too plain to require extended argument." One great integrated company, embracing

⁶⁰ *Northern Securities Co. v. United States*, 193 U.S. 197 (1904); *United States v. Union Pacific R.R. Co.*, 226 U.S. 61, 88 (1912); *United States v. Southern Pacific Co.*, 259 U.S. 214-31 (1922); *United States v. Reading Co.*, 253 U.S. 26, 48 (1920). See Report of the Attorney General's National Committee to Study the Antitrust Laws, p. 32 ("several of the corporations grew out of mergers of previously independent competitors, thus making them 'combinations' within the meaning of the Act"), and discussion, pp. 30-36.

⁶¹ Report of the Attorney General's National Committee to Study the Antitrust Laws, p. 7.

⁶² *United States v. Reading Co.*, 226 U.S. 324, 343-46 (1912), 253 U.S. 26, 53 (1920); *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 221, 243-48 (1940).

⁶³ *United States v. Aluminum Company of America*, 148 F.2d 416, 428 (2d Cir., 1945).

⁶⁴ Cited above, n. 62.

⁶⁵ 251 U.S. 417, 452 (1920). cSe discussion of case above, Report, n. 60, pp. 48-52.

⁶⁶ 251 U.S. at 465.

half the industry and dealing with competitors then much smaller than itself. was strong enough. the dissenters thought, to come within the prohibition of Section 1, if not of Section 2.

In the light of subsequent history it is fair to conclude that the dissenting opinion represents the law as it now stands more accurately than that of the plurality. If this view is correct, the word "combination" may well become an increasingly familiar word in the federal courts, in suits seeking to break up large corporations not in themselves "dominant" firms in their markets, or "monopolizations," but entities whose power and influence in some of the markets where they buy or sell might reasonably be considered unduly restrictive of competitive conditions.

This line of reasoning is the obverse of that accepted by four justices of the Court in deciding the recent *DuPont* case, holding DuPont's 23 per cent holding of General Motors' stock to be a violation of Section 7 of the Clayton Act.⁶⁷ DuPont has held a substantial minority interest in General Motors' stock since 1917, and has been strongly represented on the General Motors Board. It had actively participated in some of the difficult financial and managerial crisis of the General Motors company, immediately after the first World War. And it had sought and procured a good deal, though by no means all, of General Motors' business in the purchase of paints, fabrics, and other products manufactured by DuPont. General Motors' needs and DuPont's ability to meet them were rather freely discussed not by the directors of General Motors but by officers and employees of both companies. The suit started in 1949 and was tried largely under Section 1 of the Sherman Act, on a theory of conspiracy. But the Supreme Court disposed of it only under Section 7 of the Clayton Act, on the ground that the effect of DuPont's ownership of General Motors' stock "may be to . . . restrain . . . commerce in any section or community or tend to create a monopoly in any line of commerce." The primary issue, Mr. Justice Brennan said, was "whether DuPont's commanding position as General Motors' supplier of automotive finishes and fabrics was achieved on competitive merit alone, or because its acquisition of the General Motors' stock, and the consequent close intrecompany relationship, led to the insulation of most of the General Motors' market from free competition, with the resultant likelihood, at the time of suit, of the creation of a monopoly of a line of commerce."⁶⁸

The case has occasioned an outcry.⁶⁹ Some have criticized the application of the pre-1950 Clayton Act to vertical integrations. I can find no plausible way to avoid applying the complicated sentence structure of the Act to vertical integrations, despite the contrary views of the Federal Trade Commission. And the Supreme Court did so, in effect, in *Columbia Steel*, ten years before, a Sherman Act case which the Court said, however, "took into consideration" the policy of Section 7.⁷⁰ Others have complained because of the lapse of thirty years between the stock purchases, in 1917-19, and the time of trial, and because the Court seemed to take the position that a merger might be legal when made, but become illegal later. In the Court's opinion, the tests of Section 7 concern the business situation at the time of trial, not that of the date of acquisition.

The *Steel* case of 1920 supports this view; it decided that while the company was illegal when formed, it did not violate the Act at the time the issue came before the court. That decision under the Sherman Act could apply *a fortiori* to the Clayton Act, in view of its preventiveness purposes. Long delays present an issue of fairness in the administration of justice. But the economic potentialities of a merger may not appear for some time. The market may change.

⁶⁷ *United States v. E. I. DuPont de Nemours & Co.*, 353 U.S. 586 (1957).

⁶⁸ *Ibid.*, pp. 588-89, and see p. 607.

⁶⁹ G. W. Stocking, "The DuPont-General Motors Case and the Sherman Act," *Virginia Law Review* 44 (1958), 1; Symposium, *Georgetown Law Journal*, 46 (1958), 561-702; M. A. Adelman, "The DuPont-General Motors Decision," *Virginia Law Review*, 43 (1957), 873; J. W. Markham, "The DuPont-General Motors Decision," *Virginia Law Review*, 43 (1957), 881; J. B. Dirlam and I. M. Stelzer, "The DuPont-General Motors Decision: In the Antitrust Grain," *Columbia Law Review*, 58 (1958), 24; H. G. Manne, "The Perplexing DuPont Case: Additional Confusion in the Law of Mergers," *University of Pennsylvania Law Review*, 106 (1958), 385; Comments, *California Law Review*, 46 (1958), 266; *Yale Law Journal*, 66 (1957), 1251.

⁷⁰ *United States v. Columbia Steel Co.*, 334 U.S. 493, 507 (1948).

And there is little point in enforcing a law whose objects is to prevent monopoly as an instrument for punishing the sins and errors of the remote past.

Justice Burton's dissent concedes that the Court may consider what happened between the acquisition and the trial as evidence confirming or disproving an inference that the anticompetitive consequences of the merger were reasonably probable at the time it was consummated.⁷¹ As Stedman has remarked, Justice Burton "seems to be telling a trial court—or even worse, a jury—that it shall take the circumstances as they exist on a given date and predict what effect these will have upon competition five, ten, fifteen or twenty years hence; that in making this prediction, however, they may go beyond the facts upon which they base their guesses and consider what actually happened later—being careful, however, not to use these later facts as the basis for improving their guesswork in terms of the earlier facts. To some people, this could become quite confusing."⁷²

It has been said, with some heat, that this aspect of the Court's decision introduces an element of risk into the merger process. It plants a time bomb in the offices of the merged companies, one which may not explode for many years. This charge is true. But it was the purpose of the Clayton Act to discourage mergers whose effect might be to lessen competition or tend to monopoly in any market. Congress passed the Clayton Act because it thought that the prolific merging habits of American business had dangerous potentialities for competition. Congress was right. The antitrust law does distinguish and has always distinguished between growth through merger and growth through the internal development of the corporation itself. As we saw a few pages ago, in discussing the law's concept of "combination," merger may have serious consequences long after it has occurred. This phase of the DuPont decision seems realistic and inevitable.

Perhaps the weakest part of the opinion and the strongest part of the dissent is that concerned with the definition in the law journals buttress Justice Brennan's opinion.⁷³ The "market" for General Motors' custom is a separate market not because the paint and fabrics it used were physically different from those used by other possible customers, but because such products sold to automobile manufacturers are sold under quite distinct economic circumstances—just as milk is sold in different "markets" when sold for human consumption, and for the manufacture of cheese, ice cream, or casein. In this case the adverse effect on competition in a market, which the statute requires to be proved, is inferred as a matter of common sense from the evidence that the defendant has a business advantage not otherwise available, and not based on his superior efficiency. At least the courts are willing to do so where a significant part of the market is "foreclosed" or blocked off to competitors.⁷⁴ While the antitrust laws are probably not violated if a steel company owns a "captive" coal mine, since the other companies have plenty of prospective customers, putting General Motors partly beyond the reach of DuPont rivals for sales of paint and fabrics was a different matter.

But this phase of the case, over the long run, is its least important feature. Every judicial definition of a market depends upon an analysis of its particular economic setting. The *DuPont* opinion will contribute to that process the example of strictness, at least where great corporations are involved.

Justice Burton was on sounder ground in calling attention to the inconsistent nature of the evidence showing DuPont's actual advantages in selling to General Motors. While DuPont sold little of other products General Motors purchased, and DuPont made, "Thus," Justice Burton commented, "the alleged nefarious influence arising from DuPont's stock interest apparently affects the Oldsmobile antifreeze buyer, but not the Oldsmobile paint buyer; the paint buyers at Chevrolet, Buick and Pontiac, but not the antifreeze or electroplating buyers; and the electroplating buyer at Cadillac, but not the Cadillac paint buyer."⁷⁵ To this thrust the only answer can be a simple, practical one, inherent

⁷¹ 353 U.S. 625-26.

⁷² John C. Stedman, "The Merger Statute: Sleeping Giant or Sleeping Beauty?" *Northwestern Law Review*, 52 (1957), 567, 582.

⁷³ Particularly the article by Irston R. Barnes in the Georgetown Symposium and that of Dirlam and Stelzer, cited above, n. 69, and Stedman's, cited above, n. 72.

⁷⁴ See, e.g., *Standard Oil Co. of California v. United States*, 337 U.S. 293 (1949).

⁷⁵ 353 U.S. at p. 630. Mr. Justice Brennan's reply appears at p. 607: "The fire that was kindled in 1917 continues to smolder. It burned briskly to forge the ties that bind the General Motors market to DuPont, and if it has quieted down, it remains hot, and, from past performance, is likely at any time to blaze and make the fusion complete."

in the prospective theory of the case: that the justices, as men of the world, treated DuPont's position on the General Motors Board of Directors as a potentially restrictive advantage in influencing General Motors' purchasing policy, like the influences found illegal in the *Benrus* and *American Crystal Sugar* cases.⁷⁶

In that sense, the case means that Section 7 has regained the vitality it was intended to have from the beginning, as the principal weapon of the antitrust law for dealing with problems of merger. Thus it stands with a group of lower-court cases which in recent years have indicated that the merger amendment of 1950 will have a more sympathetic reception in the courts than its predecessor of 1914. The development of this trend should soon indicate the effectiveness of the statute in serving the ambitions of Woodrow Wilson's first Congress, and in limiting habits of merger which for seventy years have been regarded as normal and commonplace in American business.

Do the antitrust laws, and the attitude they represent, have any effect on the economy? Are they more than a facade for monopoly, a ritual we perform to prove to ourselves that we are loyal to competition, although we live by monopoly?⁷⁷ If the laws have economic consequences, are those consequences constructive and worth seeking? Do the antitrust laws assist the markets of the American economy in the performance of their functions, especially as auxiliary weapons of stabilization policy?

The antitrust laws are a serious subject. They have not been a facade for monopoly. Despite notable weaknesses in certain areas of antitrust law doctrine, particularly those affecting the process of merger, the influence of the antitrust laws on the organization of American business has been important. The structure of industry has enormous historical momentum. The antitrust laws cannot accomplish miracles, but they can and do help to guide the trend in a more competitive direction.

The antitrust laws are to a considerable extent self-enforcing. As the courts clarify point after point, businessmen and their lawyers respond to a marked degree with their own decisions. Such a response would probably not occur except in the shadow of possible action by the government, or of private damage suits, which sometimes result in judgments of millions of dollars. It is too much to expect human beings to give up monopoly profits for the abstract pleasure of obeying a law. There must be some real possibility of enforcement before voluntary compliance can be expected.

The effect of the antitrust laws on business practice cannot be measured statistically, but it is nonetheless a reality.⁷⁸

EXHIBIT 2.—*Comments of Glenn E. Peniston, DATRAN, Concerning Testimony of Mr. Rostow*

EUGENE V. ROSTOW,
Sterling Professor of Law and Public Affairs,
Yale University,
New Haven, Conn.

DEAR DEAN ROSTOW: Please permit me to respond to your July 30 statement, delivered before the Senate Subcommittee on Antitrust and Monopoly in connection with S. 1167, The Industrial Reorganization Act. As the president of Data Transmission Company, I feel compelled to comment on a certain assertion you made in your statement, which you treated as "fact" and which appeared to be a basic premise underlying your entire position.

While I could not be in attendance at the Subcommittee hearing, I have reviewed the transcript of your testimony and I noted the particular esteem in which you were held by Subcommittee members. It appeared to me that they were inclined to view you not as an advocate, but, refreshingly, as a disinterested observer of such enormous background and experience that you might

⁷⁶ Cases cited above, n. 31.

⁷⁷ Thurman W. Arnold, *The Folklore of Capitalism*, New Haven, Yale University Press, 1937.

⁷⁸ See Whitney's recent study, above, n. 5.

be able to provide a learned and impartial view of the key issues and problems . . . even though you were there at the request of AT&T.

In this respect, I was disappointed to arrive at the realization, upon viewing the substance of your statement in those portions which addressed recent Federal Communications Commission policies and actions in respect of competition in the provision of private line communications services, that your conclusions regarding the benefits of specialized carriers appear to be made from the biased viewpoints of AT&T and certainly in the absence of any understanding of DATRAN's unique services, facilities and plans.

Your recollection and review of your 1967-68 "vantage point" contained in your statement indicated that it appeared to the President's Task Force that "new and supplemental communications services" should not significantly affect either the technical integrity or the economic viability of the basic switched network. We at DATRAN agree with this premise. But then you continued at page 26: "the specialized common carriers have not in fact offered new services, or tapped new markets. They have simply duplicated the private line services of the telephone companies at lower rates . . ."

Concerning DATRAN, you are incorrect in your broad assertion. Shortly after DATRAN submitted its application for construction authorization to the Committee in 1969, the Commission, based on its analyses of these DATRAN applications, concluded that DATRAN essentially was a "special" specialized common carrier to the extent that it proposed services and facilities were "markedly different" from those proposed by other specialized carrier applicants and, I assure you, markedly different from those offered or proposed to be offered by established carriers, including the Bell System. The record in this regard speaks for itself. Now, some five years later, I would assure you further that DATRAN's digital data network and its digital service offerings, currently operational between Houston and St. Louis, remain unique.

I believe, and the public record so discloses, that the established carriers, including the Bell System, were neglecting to serve adequately an increasingly significant segment of the communications market—the data users—in the late 1960's. DATRAN set out at that time to offer efficient and economic communications services to such data users and, thereby, fill the then existing service voids and deficiencies. Fully three of those five years were consumed in receiving construction authorization because of anticompetitive delaying tactics of the existing monopoly carrier.

The Bell System, of course, has now finally responded to DATRAN (and only therefore to data users) and now is determined to hasten what you would term our "freedom of exit" from the communications marketplace. The public pronouncements of its spokesmen, its policies, and its actions render this motivation apparent. I believe it important to distinguish between what you have characterized as an effort to postpone competitive responses of the Bell System by the new carriers, such as DATRAN, and an effort to survive an anticompetitive and predatory response of a monopolist to competition.

If you have any doubt as to whether the motives of the Bell System are anticompetitive or not, I invite you to consider DATRAN's "Statement" to the Senate Subcommittee, a copy of which is enclosed herewith. I further invite you to give serious consideration, upon full examination of the pertinent record, to excepting DATRAN from further references of those specialized carrier entrants who "offer nothing new" and, however, would "nibble to death" the Bell System from beneath a "protective umbrella." DATRAN seeks only to offer its unique services within an environment wherein a most formidable competitive force—one which has avowed competition's demise—is restrained to seeking to accomplish its objective within the parameters of law.

I also recognize that reasonable men differ about the gravity and import of several of these developments. I would hope that *learned*, reasonable men would seek to understand both sides of an issue before drawing their firm conclusions.

It is my sincerest wish that DATRAN will be able to continue to develop and provide unique communications services to the data processing public, and we have already invested over \$60 million toward this end. For if competition should be denied the right to exist, we will have seen the final and full nationali-

zation of communications in a free country that has grown great and become an industrial giant because of a free enterprise system.

Sincerely yours,

GLENN E. PENISTEN,
President and Chief Executive Officer.

EXHIBIT 3.—*Letter from Eugene Rostow in reply to Letter from G. E. Penister concerning testimony of Mr. Rostow*

YALE UNIVERSITY LAW SCHOOL,
New Haven, Conn., October 7, 1974.

HON. PHILIP A. HART,
Subcommittee on Antitrust and Monopoly, Committee on the Judiciary, U.S. Senate, Washington, D.C.

DEAR SENATOR HART: I enclose a copy of my letter of this date to Mr. Glenn E. Penisten, responding to his letter of August 16, which he sent to you.

With great respect, and warm personal greetings,

Yours sincerely,

GENE ROSTOW.

Enclosure.

OCTOBER 7, 1974.

MR. GLENN E. PENISTEN,
President and Chief Executive Officer,
Data Transmission Co., Vienna, Va.

DEAR MR. PENISTEN: I appreciate your gracious and thoughtful letter of August 16. I am sorry that my reply has been delayed by the forwarding of mail to and from my summer residence, the end of the holidays, and the necessity that I attend a week-long conference in Ottawa.

You object to the comment in my testimony of July 30 before Senator Hart's Subcommittee that the specialized common carriers have not in fact offered new services, or tapped new markets. I do not agree with you that this conclusion is "a basic premise" underlying my entire argument. In my view, it is a collateral, not a fundamental issue. And you claim, in any event, that my conclusion does not apply to the services your company is offering.

In making the statement to which you take exception, I was relying not only on my own review of the situation during the last year, but on the clear implication of the FCC's "admonition" in Docket 73-1298, *In the matter of Commission Policies Governing the Licensing and Regulation of Specialized Common Carriers*, 44 FCC(2d) 467, 473-474 (1973). The Commission's "admonition" to the specialized common carriers reflected concern on this point, at a minimum.

It may be that I was incorrect in concluding that Datran's service is not different in kind from that offered by Bell. I do not think I am wrong in this regard, for reasons I shall go into later in this letter. But suppose that I am wrong, and that you are right on the matter. I have been in error before, and I shall doubtless be in that condition again.

The heart of the position on this point taken in the Report of the President's Task Force on Communications Policy in 1968, and the heart of my own testimony before Senator Hart, appears at pages 21-35 of my prepared statement. In terms of the analysis on which that testimony rests, the answer to your complaint is that the issue on which we differ is interesting and relevant, but not decisive. As you remark, both the Task Force and the FCC were impressed by the claims that those who aspired to become specialized common carriers or to provide private line services would in fact offer new services, open up neglected submarkets, satisfy hitherto unmet consumer needs, and increase the total demand for communications services. Formally, at least, the FCC takes the view that a finding of service novelty is critical to its approval of applications in the name of the public interest, convenience, and necessity. But the FCC can make mistakes, too. Service "novelty" can be a difficult fact to demonstrate in advance. And, as we have seen, experience does not always fulfill the hopes of those who make predictions. Whether the new service turns out to be novel or not, my contention before Senator Hart was that the market should be allowed to decide on competitive grounds whether the services the new company offers the public

are in fact different from Bell's, and indeed better. As I explained to Senator Hart's Subcommittee, we thought in 1968 that some change in the pattern of past practice should be encouraged by the FCC, subject to two caveats—a technical requirement of network compatibility, and an economic rule as well:

Our Report recognized that an uneconomic proliferation of private communications systems could raise serious economic problems for the integrated network. It therefore recommended, and recommended with emphasis, that more flexible policies with regard to the entry of independent companies providing supplemental or specialized communications services had to be matched, in all fairness, by allowing established carriers a good deal of freedom in ratemaking to respond to or indeed to anticipate the challenge of the new services. The same principles of economic policy would apply to charges for specialized terminal equipment connected to the network. The Report took a strong forward position on economic grounds about allowing much more flexibility in ratemaking for the common carriers in the communications field, especially in a period of rapid technological change. *In this area, the Report went beyond the issue of competitive response in its support for telephone company pricing on the basis of elasticity of demand, so long as the true variable or marginal costs of providing the service were covered. . . .* In drafting the Task Force Report, we assumed that full freedom for the Bell System to exercise those rights would keep the development of specialized common carriers to the level justified by genuine innovation, and genuine economic advantage. And we pointed out that freedom of entry had to be matched by freedom of exit if the nation was to avoid the waste of uneconomic investment in communications facilities.

Your letter does not make it clear where you stand on this crucial issue. You say (p. 3) that there is a difference between *postponing* the competitive responses of the Bell System to the new carriers, and *an effort to survive* what you call "an anticompetitive and predatory response of a monopolist to competition." All you ask, you write, is the opportunity to offer your "unique services within an environment wherein a most formidable competitive force—one which has avowed competition's demise—is restrained to (sic) seeking to accomplish its objective within the parameters of law."

A fair introduction to your conception of what "the parameters of the law" permit the Bell System to do by way of responding to competition appears. I should suppose, in your statement of August 9, 1974, to the Hart Subcommittee, and in your extraordinary "Petition to Deny Application and for a Moratorium," dated October 18, 1973, and filed in opposition to the application of A.T.&T. for authority to construct facilities for its Digital Data System.

I must confess that I could hardly believe my eyes when I read the latter document. I shall never understand how you could ask for a five year moratorium on the use by A.T.&T. of digital technology for data service—especially since the Bell Labs have worked for many years on the development of digital transmission system—the T-1 carrier—in 1962, seven years before Datran applied to enter the field. To ask a five year moratorium under these circumstances seems to me to ask for more than an "umbrella" or a "protective tariff"—It is a request for an embargo on competition from its most likely source, that is, a request for a monopoly for your company. To me, this is a curious view of "competition"—and a completely inadmissible one.

Your definition of "predatory" pricing comes out quite clearly both in this paper, and in your testimony of August 9. I disagree completely with the thesis developed in that testimony that the floor for competitive pricing in this setting should be a calculation of *average* costs attributable to the service in question. Your argument embodied what I was taught many years ago to regard as the "overhead cost fallacy"—the view that overhead costs should have anything to do with the process of determining output and price in the short run, that is, in the period when the stock of capital is fixed. My extended studies of many industries and markets over the years have fully confirmed the correctness of this theoretical view. Your definition of "predatory pricing" would make markets hopelessly rigid, and eliminate most of the normal adjustments of markets to variations in demand.

My views on this problem have appeared in my teaching and writings since I joined the Yale faculty in 1938. It is coincidence that they correspond to those of A.T.&T. As a matter of fact, my views go beyond those of A.T.&T. on the use of incremental cost estimates in utility regulation.

I take no particular credit for these opinions. To me, they seem to be elementary applications of accepted economic theory. The relationship of marginal cost to marginal revenue determines output, not price, both in competitive and in non-competitive markets. In both kinds of markets, the supplier expands output so long as it pays him to do so—that is, so long as the extra production brings in more revenue than the additional costs associated with providing it. In a competitive market, like that for wheat, for example, marginal cost equals price *at the supplier's optimal scale of output*, because prices are uniform, and marginal revenue is the same as average revenue. But that relationship is perfectly compatible with profit for the supplier, since his marginal cost may be well above average costs at that level of output. In markets where competition is not "pure" and "perfect," the mechanism of dynamic response to market conditions is the same, although price—average revenue—is not generally the same as marginal revenue. Milk used to make paint, for example, is sold at a different price from that for the liquid milk we drink.

As Professor D. H. Robertson of Cambridge once remarked, "To say that price is determined by marginal cost is always bad theory." The relationship of marginal revenue determines output, not prices. In most markets, and certainly in the market for communication services marginal cost would equal price only under conditions of stable equilibrium—which are never reached. Markets tend towards equilibrium, but never reach that state. As I wrote in 1952, in an article in the *Yale Law Journal*: "marginal cost is not even theoretically an appropriate standard for (utility) rate-making at any particular short-run level of output, since under competitive conditions output is determined by the relationship of marginal cost to price, not price by marginal cost; . . . an appropriate cost standard for pricing the product or service of a regulated utility would depend upon the scale of output achieved, which might in turn depend upon the price charged."

Thus the most important difference between us is not over the novelty of Datran's service offering, but over the criteria to be used by the FCC in controlling the reaction of the existing carriers to the threat or the actuality of competition. We differ, and differ profoundly, about what constitutes "predatory" pricing or unfair competition. For reasons inherent in the nature of the market process, I cannot accept any price as "predatory" which yields any return over the true variable costs of providing the goods or services in question. Any other rule, in my opinion, would prevent the market from encouraging the optimal use of existing resources, and the optimal allocation of new resources to productive use. For these reasons, I simply cannot believe that the Supreme Court will rule that a price yielding any return over marginal costs can be regarded as "predatory."

Considerations of this order have led me to conclude, as the discussion before Senator Hart brings out, that A.T. & T.'s franchise monopoly should be regarded as extending to all the services the national switched network can provide.

But I should say a few words, at any rate, in defense of my comment on the novelty of your services.

According to the information I have, much of which appears of record in the decision of the FCC in its *Specialized Common Carrier Services* proceeding (29 FCC 2nd at p. 888), A.T. & T.'s plans to meet the specialized communication needs of the data market are of long standing, and rest on research, plans, and market studies which were well advanced before your company undertook to enter the field. Indeed, the principle of digital transmission is being developed and used in all A.T. & T.'s modern transmission and switching facilities, not simply in the services it is providing and offering for the data market. That massive development clearly rests on years of research and development.

The trend was made clear as early as 1967, in the article by D. F. Huth in the Bell Laboratories Record, and is obvious in any event. A.T. & T. began to use digital transmission on a large scale in 1965, for end-to-end wideband channels. The evidence clearly established that A.T. & T. was not copying DATRAN's offerings, but, on the contrary, that DATRAN's offerings were adapted to the A.T. & T. model—the change from asynchronous to synchronous methods, for example, and that from a switched service offering to a dedicated private line service.

Sincerely yours,

GENE ROSTOW.

EXHIBIT 4.—S. 3580, Introduced by Senator Magnuson

[S. 3580, 93d Cong. 2d sess.]

A BILL To amend the Communications Act of 1934, as amended, to declare that the national communications policy of the Congress shall be to encourage, so far as possible, the establishment and maintenance of rates for local telephone service which are within the economic reach of every household; to require rate relief therefor; to require that the Federal Communications Commission prepare statements of economic impact on its actions which may have, or have had, a significant impact on increasing the rates for local telephone service; and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. This Act may be cited as the "Home Telephone Act".

SEC. 2. Section 1 of the Communications Act of 1934, as amended (47 U.S.C. 151), is hereby further amended by inserting "(a)" after "SECTION 1." and by adding at the end a new subsection to read as follows:

"(b) It is hereby declared to be the national communications policy of the Congress that the regulation of interstate and foreign communication by wire or radio shall be exercised in such manner as to encourage, so far as possible, the establishment and maintenance of rates for telephone exchange service which are within the economic reach of every household in the United States for the purpose of providing the members thereof with the means of promptly summoning medical assistance and fire and police protection, and participating more fully in the business and social life of their communities. To this end, the Commission shall, through the use of the Federal-State Joint Board prescribed in section 410(c) of the Act:

"(1) adopt and apply such procedures, formulas, or criteria as are appropriate to share the economies of interstate and foreign communication with telephone exchange service users by prescribing rates for interstate and foreign communication users in using telephone exchange plant to be paid to common carriers furnishing same for the purpose of reducing the cost of providing residential telephone exchange service;

"(2) include in every proposal, policy statement, report, or order, which may have a significant impact on increasing the rates for telephone exchange service in the future, a detailed statement of such anticipated impact; and

"(3) reevaluate, within two years from the effective date of this Act, each existing policy statement, report, or order, whose continuation may have a significant impact on increasing the rates for telephone exchange service in the future, and prepare thereon a detailed statement of such impact, both present and anticipated.

Nothing in this subsection shall impair or diminish the powers of any State commission."

AFTERNOON SESSION

Senator HART. The subcommittee will be in order.

This afternoon we have as our first witness the vice president and comptroller of the New York Telephone Co., Mr. Frank A. McDermott.

Mr. CHUMBRIS. Mr. Chairman, while Mr. McDermott is coming to the witness chair, may we have placed in the record S. 3580, the bill that Senator Magnuson introduced that was referred to by Dean Rostow?

Senator HART. Yes, it will be.

Mr. CHUMBRIS. Thank you.

Senator HART. Mr. McDermott, you may proceed.

**STATEMENT OF FRANK A. McDERMOTT, JR., VICE PRESIDENT AND
COMPTROLLER, NEW YORK TELEPHONE CO., NEW YORK, N.Y.**

Mr. McDERMOTT. Mr. Chairman, my name is Frank A. McDermott, Jr. I was the director of sales development reporting to the vice

president of marketing of the American Telephone & Telegraph Co. prior to July 1, 1974. As of that date I became vice president and comptroller of the New York Telephone Co. Before I get into a synopsis of my statement, I would like to refer to a question that Mr. Hellerman asked Mr. Colter this morning involving a Touchtone cost study from Illinois Bell.

I would like to point out that Illinois Bell has had a number of discussions with the staff of the commission of Illinois on September 5 and 21, and did provide full cost support study data, and working papers to the commission staff. However, we considered the information proprietary and that simple letter that was referred to by Mr. Hellerman does not tell the whole story.

Now, my statement, Mr. Chairman, describes the marketing and sales policies and practices of the Bell System, and the degree to which the Bell System has responded to the needs of its business customers. I shall respond to allegations presented to this subcommittee that certain marketing and sales practices of the Bell System are anticompetitive, or that the Bell System otherwise engages in anticompetitive activity.

To assist you, I will refer to the page number on my statement from this synopsis.

One of the fundamental objectives—

Senator HART. We will order the statement printed in full.

Mr. McDERMOTT. Thank you, Mr. Chairman.

[The prepared statement of Mr. McDermott appears as exhibit 1 at the end of his oral testimony.]

Mr. McDERMOTT. One of the fundamental objectives of the Bell System's marketing policy is to provide communications services and products that are responsive to customer needs at rate levels that will promote a universal service available to all, consistent with a fair return to shareowners. Competitive services are priced to cover relevant costs and to make a contribution above cost, to the degree that market conditions permit, to hold down the price of local telephone service. The fact that such services do make a substantial contribution to hold down the prices of local telephone service will be explained in detail by Mr. Crosland.

In the area of sales activity, the Bell System policy is that vigorous sales effort is required. At the same time, we have always recognized that the right to compete carries with it the responsibility to do so in a manner that is both ethical and legal.

We believe that failure to sell aggressively would result in deterioration of service to the disadvantage of the general telephone-using public.

The onset of competition and our response to it has not altered the basic sales goals of our business or the high sales standards with which it has always been operated.

The Bell System provides specific guidelines to its marketing and sales personnel in order that they may understand corporate and individual behavior requirements in a competitive environment. These guidelines are communicated to Bell System sales personnel through marketing letters, training letters, training courses, and antitrust review seminars.

My statement explains some of these in detail.

In addition to formal guidelines and appropriate sales training, A.T. & T. has developed an antitrust review program and seminars are currently being conducted throughout the Bell System.

The program format for the seminar now being given was developed particularly for management employees in public and contact positions. It, like the guidelines, has been designed to insure that Bell System policies and the behavior of its employees are in accordance with the letter and the spirit of the law.

During the subcommittee hearings in June allegations were made that the Bell System had failed to introduce new key telephones, PBX's, automatic call distributors, and call restriction equipment that customers needed. These allegations are not supported by facts.

I have highlighted in my statement a number of significant developments in terminal equipment that have taken place over the years through Bell System efforts.

In addition, attachment C sets forth the history of Bell System key telephone systems and associated station equipment developments from 1938 to 1974, and shows significant innovation before and after the *Carterfone* decision.

In spite of this record of innovation, certain persons appearing recently before the subcommittee have boasted that their systems possess such new features as hands free answer or intercom, voice signaling, and music-on-hold. The fact is that the technology required to provide all of the features offered presently by our would-be competitors was in existence long before 1969 and these features have been offered at various times in various arrangements by the Bell System.

Those who would compete with us have packaged these features and offered different pricing options. They have not offered new technology under any accepted construction of that term.

It should not be surprising that some of these pricing options were not available from the Bell System since we adhered to value pricing and average pricing traditionally under regulation.

Competitive entry in the terminal market has occurred particularly, (a) in Bell's product line where longer than average location life was involved, or (b) where customers sought some relief from potential future rate increases. As a response the Bell System has introduced cost-related pricing options such as two-tier pricing.

Competitors, however, have charged that these arrangements are predatory or involve pricing below costs. The facts do not support that charge, since such pricing arrangements are designed to cover all relevant costs. The Bell System is merely adjusting its offerings and pricing to the needs of the marketplace.

The Bell System has been criticized during these hearings by Mr. Kelly, the president of TIE, for not using the TIE 1030 key systems instead of developing Bell's Com-Key equipment. Mr. Kelly referred to the so-called Fenton report, which he said indicated that the TIE 1030 was superior in features and overall performance compared with the Com-Key 718.

Mr. Kelly has misconstrued the Fenton report. That report compared two systems to the TIE 1030, neither of which was Com-Key.

Since development work on the Com-Key 718 did not begin until the third quarter of 1972, the Fenton report, which was dated February 16, 1972, does not show the TIE 1030 to be superior to Com-Key in price, features, and overall performance. Furthermore, the New York Telephone Co. did compare the TIE 1030 with the Com-Key 718 in February 1974 and found that the equipment has no cost or feature advantage over the Com-Key equipment.

There is no substance to the charge that the Bell System has failed to provide its key telephone system customers new features and technology.

Attachment D details the history of Bell System PBX switchboard and console developments from 1930 to 1974. Like key telephones, Bell System development efforts have produced a significant, continual evolution in PBX concepts.

Attachment E is a history of Centrex developments, and attachment F identifies available Centrex features. These attachments further illustrate our evolutionary progress.

Recognizing these needs and providing services to match them in a timely manner has been and will continue to be the Bell System's objective. Based on our performance, as described in attachments D, E, and F, we believe the charge that the Bell System has failed to introduce PBX equipment and features needed for customers in this market is without merit.

Mr. Hellerman discussed with Mr. Huntley, of Continental Airlines, Bell's responsiveness in providing automatic call distributing equipment. The special need to distribute large volumes of incoming calls to centrally located attendants was recognized and acted upon by the Bell System since the early 1930's. Attachment G details the history of Bell System's automatic call distributor systems.

The Bell System distributing equipment development, coupled with details provided in my statement involving two customers, Continental Airlines and Delta Airlines, both of whom had special service requirements, demonstrates that the Bell System has provided and continues to plan for the specialized communications requirements of these customers.

When the course of development does not coincide with unique systems or time requirements of a customer, the Bell System has purchased from the general trades to meet these requirements.

Call restricting services also had been available by the Bell System companies.

We have an attachment I, from my statement, which shows the kind of services we have provided. Typically, these services are desired by customers with PBX or Centrex systems.

Call restriction is only one facet of telecommunications planning for efficient use of facilities by customers and is being met in a variety of ways to meet the specific needs of each customer.

There is no single design or specification for call restriction which can practically and economically be used in all applications. The reasons for this are the variations in dialing patterns throughout the country, differing needs of customers, and varying capabilities of our central offices.

In my statement I have addressed Mr. Feiner's Phonetele or Phonemaster allegations regarding the Los Angeles County-USC Medical Center, and also that the Bell System prevented Phonetele from marketing equipment and doing business outside of the State of California for a period of 4 years.

In reference to a Los Angeles County-USC Medical Center, it is our contention that the 76 foreign exchange lines, plus the Phonemaster, were the major reasons for the cost savings Mr. Feiner detailed in his statement.

I should also add that the Phonemaster was disconnected by the Los Angeles County-USC Medical Center a month before Mr. Feiner's appearance before the committee, and it was replaced by Bell System's Centrex and call-restricting equipment.

Mr. Feiner's allegations are not supported by the facts, as it concerns marketing his Phonemaster equipment outside of California, because from the onset of the introduction of the Phonemaster in November of 1970, the Bell System has cooperated in the development of connecting arrangements to properly interface the Phonemaster with the telephone network.

As detailed in my statement, four connecting arrangements, specially designed for call-restricting equipment, were made available to Mr. Feiner during the period November 1970 to December 1973.

The Bell System will continue to cooperate with manufacturers, as we did with Mr. Feiner, to develop appropriate connecting arrangements. Attachment K contains a list of some 75 connecting arrangements now offered by the Bell System.

In summary, some 30 years before the Carterfone decision, the Bell System offered a line of basic services and supplemental features to business market customers in terms of key telephone, PBX's, call-distribution equipment, call-controlling, and call-restriction equipment. Innovation by the Bell System prior to and since the Carterfone decision has occurred and has resulted in the improvement of existing service offerings and the reduction of costs.

The Bell System, not the interconnect industry, has provided the fundamental research and development effort that has culminated in the innovations which comprise the vast majority of the basic building blocks of modern user premises equipment. So far as we know, the interconnect industry has largely been engaged in re-configuring or repackaging those building blocks.

Statements by witnesses and letters and other documents which have been introduced in the record by the staff, alleging anti-competitive behavior by the Bell System companies, is my next section.

At the outset, I wish to make it clear that the Bell System has no policy supporting anticompetitive behavior and we do not purposely act so as to undermine any who would compete with us. We have expended great efforts to assure that the behavior of Bell System employees is fully in keeping with the spirit and the letter of the law. We are very concerned with allegations of this nature and we have investigated each allegation. In reviewing some of the material placed in the record, we found it difficult to distinguish between

allegations and innuendos and between hearsay and fact. The material included such things as philosophical dissertations on how to best provide telephone service to the Nation; unsigned documents which were purported to be affidavits—almost all of which were 3 or 4 years old.

Many of these documents misrepresent facts and issues that had been considered by regulatory agencies or by the courts. However, we have attempted to develop the facts surrounding each case.

For purposes of responding to the allegations we divide them between those made by witnesses appearing before the subcommittee and those made or implied in letters and other documents introduced into the record by the subcommittee staff.

In attachments U and W we have detailed our responses to 121 of these allegations.

I would call your attention to the statement and testimony and exhibits submitted by Mr. Ronald Fox of TPI as an example of my responses. Mr. Fox states in his opening remarks that he resigned from Michigan Bell in February 1971 after becoming disillusioned with the anticompetitive tactics being used daily and the prevailing atmosphere of paranoia relative to interconnection. Attachment N of my statement is a copy of Mr. Fox's letter of resignation, which contains unsolicited comments on his career with Michigan Bell. The letter states in part:

*** It has been my pleasure *** to work under the supervision of highly qualified and competent people who barred no hold to contribute to and assist in my progress in the business and development as an individual.

Mr. Fox's charges of anticompetitive tactics on the part of Michigan Bell are not supported by my investigation. For example, Mr. Fox alleges that Michigan Bell threatened several charitable organizations with the discontinuance of grants if they used non-Bell equipment. He mentions the specific cases of Calvin College, Albion College, and the Battle Creek "Y". He alleged that Michigan Bell asked for their grant back after the "Y" bought an interconnect system. My attachment O includes a record from 1958 to 1974 of Michigan Bell's contributions to member schools of the Michigan Colleges Foundation which includes Calvin and Albion. A similar list, sworn to by Mr. William E. Ebben, vice president of Michigan Bell, is set forth in my attachment T, exhibit 33. This shows that Michigan Bell's contributions have been made consistently throughout the years without regard to ownership of telephone equipment. A signed affidavit from the director of the Battle Creek "Y" which states that Michigan Bell continued its grant program in the amount of \$6,000 after the "Y" purchased TPI equipment is also included in attachment O.

You may recall, Mr. Chairman, that in response to this allegation of Mr. Fox concerning the Battle Creek "Y", you stated "it struck me as a practice that even an alley-shop operation operated by a real skinflint would hardly undertake to do."

Senator HART. I did, and if true it would still accurately describe my reaction.

Mr. McDERMOTT. It does accurately describe the circumstances

if true. Our position from the statements I just made and the affidavit was not, and Mr. Fox's statement was patently unfair.

The affidavit of the "Y" director attached to my statement shows that Mr. Fox's charges were not true.

Now, my investigation was not the only one which discredited Mr. Fox's allegations before this subcommittee. Attachment P contains an article from the Detroit Free Press of June 26, 1974. The newspaper made its own investigation and found at least three of Mr. Fox's allegations, including the one about Calvin College, to be incorrect.

In the case of Calvin College, Mr. Fox submits a chronology of events that is both misleading and distorted. He alleges that Michigan Bell offered to furnish a Centrex system at a rate of return below desired levels and below that provided by tariff. The facts are that Michigan Bell offered to provide the Centrex at its tariff rates, the only rates it is authorized by law to charge.

Mr. Fox accused Michigan Bell of refusing to provide rates for the interconnection of a privately owned Centrex. The facts are that the specific request for the interconnection was made on September 21, 1972, 2½ years after Mr. Fox claimed it was made, and the rates were provided on March 27, 1973. To date, Mr. Fox has not placed an order for service under these rates.

Mr. Fox claimed Michigan Bell refused to sell cable for less than 700 percent of the retail price. That claim is erroneous. The facts are that Michigan Bell has sold over \$99,000 of cable to others, including \$6,600 worth of cable to Mr. Fox's firm, TPI. The price of such cable is based on reconstructed cost new less physical and functional depreciation.

Mr. Fox stated that Michigan Bell uses the termination charge in a discriminatory manner, citing an alleged waiver of the charge in the case of Mansco Supply if the customer stayed with Bell. The customer decided to stay with Bell, and was properly billed and subsequently paid the appropriate termination charge of \$632.55.

Mr. Fox accuses Michigan Bell of unhooking in the case of Van Ess Construction by threatening the customer with loss of Bell's business. Attachment Q to my statement is an affidavit of Mr. Russell Kniff, treasurer of Van Ess Co. stating—

The reason for canceling my contract with TPI systems was solely my own decision. It was based on observations and some conjecture on my part of current and future possible maintenance problems. In no way was I intimidated, coerced, or threatened with loss of contracts from Michigan Bell Telephone Co. by their representatives.

Mr. Fox alleges that Michigan Bell caused TPI to lose a \$140,000 sale to Westdale Realty by actively pursuing the case after TPI had signed a contract with the customer. Attachment R is an affidavit signed by Leonard L. Westdale, president of the Westdale Co., which states that there never was a contract between his firm and TPI and that Michigan Bell's presence in the negotiations was due solely to his request.

Following publication of Mr. Fox's testimony in a local newspaper, Mr. Orson E. Coe, president of Orson E. Coe Pontiac, Inc., in

Michigan, sent Michigan Bell a letter refuting Mr. Fox's statement that Michigan Bell employees were urged to boycott Mr. Coe's firm. Attachment S is a copy of Mr. Coe's letter.

Further evidence of the fact that Mr. Fox's allegations were incorrect and misleading is set forth in attachment T. This attachment is a 73-page rebuttal of Mr. Fox's allegations and has been attested to by Mr. William E. Ebben, a vice president of Michigan Bell Telephone Co.

The facts as stated here and contained in my statement and attachments thereto, refute and discredit Mr. Fox's allegations before this committee. In fact, his statement before this subcommittee can be classified as incorrect, irresponsible, and patently unfair, and I would hope the committee would consider removing Mr. Fox's statement and testimony from the record.

Other material placed in the record to which I have responded in my statement and attachments consists of 121 identified cases. Of the 121 identified cases—I discovered no evidence of anticompetitive behavior on the part of any Bell System company. I did uncover four incidences where employees, acting on their own, made statements not in accord with our corporate policy.

We do not wish to minimize in any way the serious nature of every anticompetitive allegation. It should be noted, however, that after nationwide solicitation for such cases by the subcommittee staff, 121 allegations were introduced into the record. Of this number 17 were submitted by eight interconnect customers, and the remainder were submitted by interconnect companies. Of the 104 allegations submitted by 24 interconnect companies, seven companies submitted 72 of these allegations, or almost 70 percent of the total.

In view of the fact that there are 250 or more interconnect companies in the United States, and about 20,000 interconnect customers, and over 340,000 connecting arrangements for service, clearly the allegations presented to the subcommittee are not representative of Bell System performance. Indeed, the conclusion to be drawn is that the Bell System's policy of fair competition and its program to implement this policy has generally been successful.

The final section of my statement explains why the Bell System requirements for connecting arrangements are needed to protect the network. Also, the design, costing, and pricing of such connecting arrangements are not anticompetitive.

The Bell System does not price below cost for key systems and PBX's. Some witnesses before this committee have challenged the need for connecting arrangements to protect the network, alleging that they are not required, are overdesigned, are too costly, or are priced above cost. Ultimately some witnesses suggested that if protection of the network is needed, it could be achieved through some sort of certification program and as Dean Rostow said this morning, the National Academy of Sciences panel before the FCC in July, addressed all of these charges and concluded that the need for protection to the network had been established, and also that the present tariffs are an acceptable approach to providing this protection.

While some witnesses before the subcommittee alleged that such connecting arrangements are overpriced we do not concur in that statement. In addition to that, they have offered no support for such observations other than the claim that Bell System prices are unreasonable in relation to the price of their equipment. Obviously no relationship exists between the tariff charge for connecting arrangements to protect the network and the cost of customer-provided devices connected to the network.

In conclusion, we believe the Bell System has demonstrated during these hearings an unparalleled record of innovation in communications equipment and services. This record of innovation has always been based on customers' needs and economic considerations in the marketplace.

The Bell System does not have and does not condone any policy of anticompetitive behavior. We have demonstrated that our sales practices are explicit and our desire to compete aggressively in legal and ethical manner has been stated. Customers who buy terminal equipment from other than Bell System companies are still Bell System customers for other telephone company services. There is no place in the Bell System for employees, management or non-management, who engage in anticompetitive behavior activities.

We also deny that we have priced our products and services below cost or in a predatory or anticompetitive manner. We have defined the Bell System's response to competition as ethical, legal, aggressive, innovative and responsive in the area of product development and pricing options. Our responses to competition have been subjected to scrutiny by local and State commissions and by the FCC in formal and informal hearings.

The Bell System's accomplishments reflect unparalleled excellence in research and technological development, superior manufacturing ability, and a management that is dedicated, innovative, and uncompromising in its objective to produce the finest communications services at reasonable prices.

Senator HART. Thank you, sir, very much for not only a detailed statement but for an effective summary of that statement.

Mr. McDERMOTT. Thank you.

Senator HART. I know that staff has questions, but for understandable reasons, you spent considerable time in your prepared statement in discussing the testimony of Mr. Fox. It is my impression that you have made effective response to the extent that in a hearing like this it is possible.

Mr. McDERMOTT. Thank you, Mr. Chairman.

Senator HART. But this morning we showed Dean Rostow that memorandum or computer printout.

Mr. McDERMOTT. Yes.

Senator HART. That was a part of the Fox testimony. You remember, it lists the companies that Western Electric does business with in, as it happens, western Michigan.

Mr. McDERMOTT. Mr. Chairman, may I comment on that in addition to Mr. Rostow's comment?

Senator HART. Yes. I invite the comments.

Mr. McDERMOTT. I would like to tell you I have been in the Bell System for 38 years, and I have been in responsible positions for the last 25, management positions.

That list of Western Electric suppliers has been published, to my personal knowledge, to people who are in contact positions in the Bell System since 1952. And the reason is that we believe it is important for our public contacts in cities, towns, and villages—as Senator Kennedy said this morning about Western Electric—to know what the contribution is of Western Electric to that community. And those lists have been distributed for over 25 years.

Senator HART. For the purpose of informing Bell personnel of the community role played by Western?

Mr. McDERMOTT. Yes, that was the original intent and still is the intent of that printout.

Senator HART. Is it done systemwide?

Mr. McDERMOTT. Western Electric sends that information to every Bell System company president. They usually distribute it to their operating staffs. I cannot testify how far down the chain that goes, but usually it goes down to about the third level of management.

Senator HART. What, then, is the meaning that we are to attach to the last paragraph:

In addition to your use of this information, your marketing coordinate may find this helpful in recommending the sale of our service in a competitive situation.

Mr. McDERMOTT. Well, I think Gene Rostow put it in the proper context, that information that is available to us in the business that can be used in the proper manner should be used, and information as to the purchases that are made, as far as Western Electric is concerned, does not mean there is a threat attached to them. This is information that is helpful to salespersons, and I find no difficulty—

Senator HART. This is, I suppose, where you get into the gray area.

Mr. McDERMOTT. I think so. I think, Mr. Chairman, it is the intent of that statement that is important, and I believe—

Senator HART. Well, whatever the intent, what about the effect?

If a salesman runs into a customer who is about to buy somebody else's equipment and leafs through this and says, "Wait a minute, did you know that Western Electric, not unrelated to us, bought \$65,000 worth of equipment from you?" what does that mean?

Mr. McDERMOTT. Senator, we are opposed to that kind of specific use. We think that—

Senator HART. How do you insure against the very logical use, such as I just described, occurring?

Mr. McDERMOTT. Well, I think we have insured in our policies, fundamentally, and in the training programs that we have had. In the attachment that I have to my statement you will see a very detailed analysis of how competitive situations, including that particular type, should be covered by Bell System salesmen.

We are opposed, and Mr. deButts is on record. We do not think reciprocity is good for the telephone company, and we certainly do not think it is good for the customers we deal with. We are very much opposed to it. We think it is wrong.

Senator HART. Is there any explicit counsel against using it, as I have just described?

Mr. McDERMOTT. Yes; in the training material that we have published, yes; and in the antitrust reviews, seminars, that I mentioned.

Senator HART. You would not regard this as a loaded gun in the hands of a salesman?

Mr. McDERMOTT. No; I would say not.

Senator HART. Because you have included safety instructions in the package; is that it?

Mr. McDERMOTT. Well, not quite, Mr. Chairman. It deals specifically with this problem in the sales area.

Senator HART. Do the phone companies give similar lists of persons with whom they do business in the community to a salesman?

Mr. McDERMOTT. Well, the New York Co., which is the only one I can speak to, did publish a similar list; yes.

Senator HART. And it gets into the hands of sales and marketing personnel?

Mr. McDERMOTT. At the level that I described, yes; with the same intent, Senator.

Senator HART. Before I leave that, I leafed through it this morning, and I noticed that Western Electric purchased \$2,000-odd worth from Rocky's Bar, Inc.

Do you know what that was?

Mr. McDERMOTT. I am afraid I cannot answer that.

[General laughter.]

Senator HART. Just one other thing. There have been complaints, as you know, about sales under cost or predatory pricing, whatever they call it. And you state this is not engaged in. And yet there are a couple of documents that we have received that would raise some questions; and you are welcome to respond to them.

One is a document dated January 13 of last year from C. J. Nickelsen to W. Schiavoni which states in part—

Experience with other systems which have been artificially lowered to meet initial price objectives has not been good. If demand does not materialize, subsequent bulletin costs are increased to reflect actual costs. Tariffs which are based on initial costs then become uncompensatory and are hard to change.

And in a somewhat similar tone is a memorandum attached in the minutes of the president's conference, May 8-13, 1972. One sentence reads: "Unfortunately, our newest systems, 805 and 770, rated at competition with our present noncompensatory offerings."

Do you care to comment on that?

[The minutes referred to appear as exhibit 4 at the end of Mr. McDermott's testimony.]

Mr. McDERMOTT. Well, the question of compensatory offerings has to be put in a time frame. When we were on value pricing and average pricing prior to *Carterfone* many of our offerings were not compensatory in that sense. The whole class of vertical, as we refer to them, or business services were. But any individual item might not have been compensatory at a particular time.

Now, we have, as a result of changing our pricing approaches, made every effort to eliminate and, in successive rate cases before com-

missioners at the State levels, to bring those costs into line so that they are compensatory and they are not priced below relevant costs.

I would point out to you, Mr. Chairman, that many of the statements that were made by Mr. Craver from Litton involving the *Pacific* and the *Michigan* cases protested the other side of that equation. And the other side of that equation is that when we attempted before the commission to, in effect, correct our prices, both those that were overcompensated and those that were undercompensated, naturally, the competition objected to those prices that we might be lowering to still keep them compensatory but bring them into balance with the class of service we were talking about. So I think it is a two-way street.

And I think one of the difficulties that we talked about this morning in Mr. Rostow's statement is that if we, as the Bell System, are going to go along with whatever decisions are made by the Congress and by the FCC as to pricing, obviously, we would like to adjust our prices in that area so that they are more cost related and still make a contribution to overall services.

Senator HART. Mr. O'Leary.

Mr. CHUMBRIS. Mr. Chairman, before we have questions from Mr. O'Leary, along the lines of the questions you were just asking, I have spent a lot of time going through all of the material that was submitted to us last Friday.

And the warnings that you give to the people who are to receive this paper from your general attorney, John F. Preston, Jr.—

Mr. McDERMOTT. Mr. Chumbris, is that the original memorandum from 1969?

Mr. CHUMBRIS. That is the one you submitted with your document as part of the exhibits.

Mr. McDERMOTT. Yes.

Mr. CHUMBRIS. I was amazed, actually, to what strains you did go in warning your people. For example, when you are talking about what can you say about our competitors' products and what can you say about our own products it seems to me that you use a great deal of restraint.

I would not take the time of the subcommittee to read it into the record, because I assume this will be made a part of the record.

Is that correct, Mr. Chairman? All of the exhibits?

Senator HART. Yes; all of the attachments.

Mr. CHUMBRIS. I would say that you have shown a great deal of restraint. But let me just give one part of it.

You state in your prepared testimony—

You cannot use half truths. You may not be able to say that the FTC has found your competitors guilty of unfair trade practices, even if it is true. It may also be true that the competitor has long since ceased and desisted from these practices. The customer does not weigh every word you say. Your words may be true, but they may be framed in such a way as to mislead and deceive. If so, you are engaging in deceptive practices.

These are part of the warnings that you have. And if they are followed religiously, I would say there is a great deal of restraint.

Mr. McDERMOTT. Well, I think it is a responsibility, Mr. Chumbris, of the management of the business to see that those attachments that

we include under appendix A are followed out. And we believe we have devoted a great deal of effort in this direction.

Mr. CHUMBRIS. Thank you. Thank you, Mr. Chairman.

Senator HART. Mr. Hellerman?

Mr. HELLERMAN. Thank you, Mr. Chairman.

At this point I would like to put into the record an additional 80 folders of complaints against the Bell System marketing practices, and that they should be held in a nonpublic position for a period of 30 days, and be made available to A.T. & T. so they may examine them and comment on them.

Mr. McDERMOTT. Could I ask a question as to why at that particular time you are introducing additional cases into the record unless they represent some substantially different questions than we have already covered in the 100-odd questions there?

We would be glad to investigate each one of those, and we would certainly be glad to submit our response, but I guess I question whether or not they belong in the record at this time.

Senator HART. Well, my order is that they shall not be entered in the record at this time. They will be delivered to you. We will await your response to them and evaluation of them and then make a decision as to what to do with them.

Mr. McDERMOTT. Thank you.

Mr. HELLERMAN. Mr. McDermott, before the *Carterfone* decision, what could a customer do, where would he go if he was not satisfied with his telephone equipment or the telephone company's service? Was he not more or less at the mercy of the telephone company?

Mr. McDERMOTT. Well, I think that would depend on what kind of equipment we are talking about, Mr. Hellerman.

Mr. HELLERMAN. Well, let us take a case that you mentioned in your testimony. In the case of Continental Airlines they wanted an electronic ACD and apparently it was unavailable from Western Electric.

Mr. McDERMOTT. Yes; it was unavailable at that particular time from Western Electric, but it was not unavailable in the marketplace and Delta Airlines approached the New York Telephone Co. at a later date, and the New York Telephone Co. purchased the Collins equipment, and tariffed it, and provided it to Delta.

Mr. HELLERMAN. But if the *Carterfone* decision had not been reached Continental Airlines may not have spent so much money on developing that electronic ACD.

Mr. McDERMOTT. I do not agree with that, Mr. Hellerman. I feel that the *Carterfone* decision had nothing to do with the Continental Airlines decision. They fundamentally wanted to purchase equipment. We were willing to provide that equipment on a tariff basis, but as I refer in my statement, Mr. Huntley and Continental Airlines had made the decision to purchase that equipment. We did not bid on that job.

Mr. HELLERMAN. That is because they wanted an electronic ACD and you did not have one available.

Mr. McDERMOTT. No; it was not because they wanted an electronic ACD. That was because they wanted to purchase the equipment and

own it. We could have furnished the electronic ACD through outside purchase, and as indicated and as I have said before in the case of Delta Airlines, that is exactly what we did 6 months later.

Mr. HELLERMAN. That was the same equipment that was put in for Continental.

Mr. McDERMOTT. Yes; we never have contended, Mr. Hellerman, that we have a monopoly on inventing all kinds of communications equipment. We are perfectly willing to buy in from the outside to meet a specific need that cannot be met in the timeframe by our own equipment.

Mr. HELLERMAN. As long as we are talking about Continental Airlines, you commented on the fact that Hr. Huntley was incorrect at the time of his cutover that 20 percent of his trunks were bad. I had a conversation with Mr. Huntley to check once more and he said he was there at the time, that there were 125 trunks, and that 20 percent of them were bad. He said many of them were fixed on the spot; but still at that time 20 percent were bad.

Mr. McDERMOTT. Well, I do not know exactly what that means because we are talking about a timeframe that I think neither you nor I can evaluate. Our people from Southwestern Bell, as the system was cut over, maintained that only 3 percent of those trunks were out of order, and for the month of June the trouble reported on all of his trunks was about 1 percent.

Mr. HELLERMAN. Leaving that for a moment and going to Mr. Fox's testimony, you mentioned the Detroit Free Press article and your investigation disclaiming, or disproving, or questioning some of Mr. Fox's statements. You did not seem to have any problem with the quote in connection with the "Y" contribution: "As you know, Bell has pledged you \$10,000. The balance of that might be in jeopardy."

To me that seems pretty much like a threat.

Mr. McDERMOTT. Well, I do not concur in that, and there was another article in the Detroit Free Press from the president of that "Y" that appeared in the last few days, and I would just like to read it to you and would be glad to introduce it into the record. And it says, to me, Mr. Fox, and the press have severely maligned Michigan Bell. This is Mr. Harold W. Sundenberg, who is the president of the Battle Creek "Y".

I would be glad to have you see this, Mr. Hellerman.

Mr. HELLERMAN. Then you have a comment on the Van Ess Co. pipeline situation, and you have submitted an affidavit from Russell Kniff saying—here he says in part, "In no way was I intimidated, coerced, threatened, or threatened with the loss of contracts from Michigan Bell Telephone Co.'s representatives."

Do you know whether any further checking was done to see whether there were any threats made other than speaking—

Mr. McDERMOTT. Well, Michigan Bell has stated in its affidavit that no threats were made.

Mr. HELLERMAN. I would like to have introduced into the record, Mr. Chairman, a letter from TPI, Inc., which is Mr. Fox's employer firm, signed by Donald McKersie, president, dated July 25, 1974, which in part says, where he talks about why the system, or why the contract was gotten out of by Mr. Kniff with TPI:

After we left Mr. Kniff's office, I called Mr. E. F. Dikeson, district marketing manager for Michigan Bell in Grand Rapids to complain about this act of reciprocity. Mr. Dikeson assured me he would investigate and get back to me as soon as possible. Within a few days, Mr. Dikeson called me and advised me that although it was not their policy, this incident did in fact take place, and Mr. Gerald J. Tuloma, district plant manager, was the telephone employee involved. Mr. Dikeson apologized and advised me that it would not happen again.

Senator HART. It will be received.

Mr. HELLERMAN. Thank you, Mr. Chairman.

[The letter referred to appears as an exhibit at the end of Mr. Fox's oral testimony.]

Mr. McDERMOTT. Would you furnish us with a copy of that, Mr. Hellerman?

Mr. HELLERMAN. Certainly.

You also discuss the Truckweld situation where you say an unfortunate comment by an employee was made. You did not comment on the fact that a truck which had not been worked on was withdrawn from the Truckweld plant.

Mr. McDERMOTT. Well, I think the important thing was that we did not change our business relationship with Truckweld and the amount of business that we continued to give them, as indicated in the record, would certainly negate the unfortunate comment by one of our employees. We did not change our business relationship with Truckweld and we have put into the record in the exhibits the amount of dollar volume that we did with Truckweld before and after the purchase of outside, non-Bell equipment, and we have also indicated, if those purchases dropped, what the reasons were for that.

Now, we are continuing to do business with Truckweld, Mr. Hellerman.

Mr. HELLERMAN. Do you believe that the employee who made the remark acted on his own, in taking out the truck?

Mr. McDERMOTT. I certainly do.

That is our testimony in the record.

Mr. HELLERMAN. You mentioned also Mr. Feiner's testimony where the equipment was withdrawn and replaced by your equipment.

Mr. McDERMOTT. No. I said that I believed that the county medical center withdrew the equipment. We did not.

Mr. HELLERMAN. To your knowledge was that equipment reinstalled elsewhere?

Mr. McDERMOTT. Oh, it might have been. I did not imply that it did not. I simply said at the time that Mr. Feiner testified before the committee, that equipment had been disconnected for over a month and had been replaced by Bell System equipment of a Centrex type with call restriction features.

Mr. HELLERMAN. I believe in your testimony you talk about call restricting equipment, the fact that it is generally available. I believe in the folders in front of you you will find document No. 24, which is a document from Mountain Bell, dated August 24, 1972.

Mr. McDERMOTT. I do not think I have it. Is this it, Mr. Hellerman?

Oh, in the folders. Excuse me.

Mr. HELLERMAN. Towards the bottom of the front page it reads:

In addition to the above two cases, which seem to make it illogical to continue refusal to provide such a service, we feel the following observations are pertinent.

Mr. McDERMOTT. Well, I do not quite follow. Mountain Bell does provide toll diversion equipment.

Was that your question, Mr. Hellerman?

Mr. HELLERMAN. Yes; but apparently they talk about that they should not continue to refuse to provide such a service.

Mr. McDERMOTT. Well, it is usually a tariff item. I am not familiar with the tariff arrangements on this particular item in Mountain Bell. But once you file tariff you are not in a position to refuse service.

Mr. HELLERMAN. Was there any particular reason why you did not address yourself to the written testimony of Mr. Berge of Tropicana?

Mr. McDERMOTT. In what respect?

We have it in the exhibit, all the points that he raised in his letter.

What one are you interested in?

Mr. HELLERMAN. I was concerned about why the coin telephone was removed from his lobby?

Mr. McDERMOTT. Because the volume of usage on it did not warrant keeping it there.

Mr. HELLERMAN. As I saw, the phonebooth remains, the line remains, the telephone book remains.

Mr. McDERMOTT. Actually, Mr.—I forget his name—put his own extension off the board in that booth after we removed the coin telephone.

Mr. HELLERMAN. Yes.

But did he request that that pay telephone stay there?

Mr. McDERMOTT. Yes, he did. But the question of our pay telephones has to do with the amount of usage on them. We do not maintain a pay telephone in a location if there is no volume of calls on it. It is very inefficient, unproductive. It earns no revenue.

Mr. HELLERMAN. It seems surprising after 13 years, though.

Mr. McDERMOTT. Well, it was not that surprising. I do not happen to have the record of coin usage in front of me, but it is in one of the exhibits there.

Mr. HELLERMAN. On the bottom of page four of your testimony you talk of the Bell System providing specific guidelines to its marketing and sales personnel.

In that connection what does the term "smart selling" mean to you?

Mr. McDERMOTT. I would not know, Mr. Hellerman. How has it been used? In what context?

Mr. HELLERMAN. Well, I am not quite sure. But in the Michigan Bell marketing manual explaining the new tariff, in the introduction it talks about the purpose of the training program:

Knowledge of the new restructuring concepts is essential for "smart selling" in the interim before the filing of the rate case and the rate order.

Mr. McDERMOTT. Is that to be compared with dumb selling?

I do not understand what you are getting at, Mr. Hellerman. We would want our people to be smart, I hope, in the application of their training.

Mr. HELLERMAN. Well, on page 29 of that document, it says, in connection with key set and call director losses:

We currently lose up to 50 percent of key systems without a chance to compete. That part of the market that is most vulnerable today will receive a rate decrease under restructuring. Contact with those customers who are getting decreases should improve our opportunities to compete and to win.

Mr. McDERMOTT. Well, I cannot attest to the exact percentage of 50 percent or what ever that was that you used. I can attest to the fact that usually the small business market—meaning the one- and two-line, key-type customer—has been underpriced in terms of cost in most of the companies in the Bell System. So the reference to improving that price is probably legitimate.

Mr. HELLERMAN. Continuing on with sales guidelines, we introduced into the record in our last hearings a memorandum from New Jersey Bell Telephone dealing with key telephones and new rates, talking about situations which may occur, such as features missing, and their advice to the people contacting them:

"The negotiator should not initiate discussion of the package rates, the features included in the rate, nor offer to add missing features."

Mr. McDERMOTT. Well, I am not familiar with that particular letter, Mr. Hellerman.

Mr. HELLERMAN. We will provide that, then, for you.

Mr. McDERMOTT. Thank you.

Mr. HELLERMAN. You attached to your testimony an antitrust seminar pamphlet, and you mentioned also that 59,000 employees have taken that course.

Mr. McDERMOTT. Yes.

Mr. HELLERMAN. Could you tell us when that course was put together?

Mr. McDERMOTT. Well, I would say it was sometime in the latter half of 1973, and we began active seminars in the early part of 1974.

Mr. HELLERMAN. What prompted the introduction of that course and the requirement that various marketing people and management people take that course?

Mr. McDERMOTT. Oh, I think a number of things, Mr. Hellerman. As indicated in attachment A, we have periodically updated our memorandums and guidelines in this area, and I believe that this was an updating of that, particularly as it affected our present competitive position.

Mr. HELLERMAN. In connection with that antitrust seminar I noticed that one of the scripts in there is called "What Is In Our Files?" In looking through that the idea occurred to me, does this not really communicate the idea to be careful what you write; it may be used in an antitrust suit, and do not keep incriminating documents.

Mr. McDERMOTT. I do not recall him saying that.

Mr. HELLERMAN. Well, that is the impression I got. Why was that included in there?

Mr. McDERMOTT. Well, I think it is a normal management caution on the amount of paper and information that you keep in files. And I would like to say that in our business we are in the telephone business, not the letter-writing business. So we would encourage people to use the telephone.

Mr. HELLERMAN. Going again to Mr. Fox's testimony, he mentions that sales and marketing people, particularly the marketing consultants, were judged on the revenue they produced. In other words, the amount of the customer's bill that he increased.

Mr. McDERMOTT. As the sole judgment?

Mr. HELLERMAN. As the primary judgment.

Mr. McDERMOTT. I would have to disagree with that. The revenue aspect of a sales job is obviously important. But there are many other factors that we use to evaluate salesmen in addition to revenue. For example, we are in a service business, Mr. Hellerman, as well as a sales business. Our job is to provide a service. There are many, many things outside of adding revenue that are important to a salesman's performance in a business.

Mr. HELLERMAN. Would you say that revenue is not the major requirement?

Mr. McDERMOTT. I would say it is one of the requirements, Mr. Hellerman, as it should be.

Mr. HELLERMAN. I call your attention to folder No. 16. It is an A.T. & T. perspective, November 15, 1973. It says, "Whalen describes functions of A.T. & T. marketing organization." And a paragraph in there:

An effective sales force: The sales development group under Frank McDermott will make sure the sales force is effective and fully competitive. The main measurement will be how revenue objectives are met.

[The document appears as exhibit 22 at the end of Mr. McDermott's oral testimony.]

Mr. McDERMOTT. Well, I find no real problem with that, Mr. Hellerman. One of the main measurements is revenue. There are other main measurements. I do not know of any sales force anywhere that does not consider revenue an important part of its performance objectives.

Mr. HELLERMAN. Is it your testimony that the Com-Key was not developed to meet the TIE equipment?

Mr. McDERMOTT. It was my testimony that Com-Key was developed to meet the market needs of customers, including a survey of competitive equipment. It is obviously based on both of those things. Not particularly TIE, I might add.

Mr. HELLERMAN. I am reading from an Ohio Bell Telephone Co market research report dated September 1973, which was introduced earlier into the record. Part says:

The Com-Key 718 was designed to compete directly with the Nazuko system, because it has been its strongest competitor in the Bell System.

Mr. McDERMOTT. Well, I am sure, Mr. Hellerman, that there have been many statements made like that by some of our operating companies. The facts are that the Com-Key was developed as a result of an internal sales and marketing research effort that was under-

taken in 1972, and it considered all of the market needs, as well as all of the competitive organs in the marketplace at that time, including TIE.

Mr. HELLERMAN. In the various statements and memos that you give to various operating companies and they in turn pass down to their employees, have you ever seen or been involved in writing a document which also says to your employees, "a company that owns its own terminal equipment is also our customer and we should treat all customers alike"?

Mr. McDERMOTT. I believe I quoted that in this statement, I think. In effect, I said that the fact that a customer buys non-Bell equipment does not mean that we have lost him as a customer. He is still a customer to the Bell System for other services.

Mr. HELLERMAN. How do you square the various antitrust seminars and the guidelines with statements of the chairman of the board that we will fight competition, statements that Mr. deButts has made before presidents' meetings that "We will have one policy, that there will be head-knocking, and that we will fight"?

Mr. McDERMOTT. I do not recall Mr. deButts ever making a statement like that, Mr. Hellerman. Mr. deButts is as interested as I was when I was director of sales development in a very aggressive and a superior effort on the part of our sales force to compete, and that is a management posture that I think is in the interest of not only the Bell System and its customers, but also the competitors.

Mr. HELLERMAN. Do you think when a person is requested to provide information to this subcommittee regarding the Bell System or any of its companies, and that person does, in fact, provide information and/or opinions, he is harassing A.T. & T.?

Mr. McDERMOTT. No.

Mr. HELLERMAN. On page 49 of your statement, you indicate that, in connection with a complaint that the telephone company did sell equipment, that there was no problem with that.

Mr. McDERMOTT. I do not follow the quote—on page 49?

Mr. HELLERMAN. Yes.

Mr. McDERMOTT. If you will wait just a moment, I will get it, Mr. Hellerman.

Mr. HELLERMAN. It was in connection with the trimline telephone.

Mr. McDERMOTT. Well, now would you tell me what it is you are referring to?

Mr. HELLERMAN. There seemed to have been a complaint that there was a violation of the consent decree.

Mr. McDERMOTT. Well, I believe I answered that in my statement; that there is no such violation.

Mr. HELLERMAN. Is it, then, your position—or A.T. & T.'s position—that there is no prohibition in the consent decree from their selling terminal equipment or any other kind of equipment?

Mr. McDERMOTT. Well, I do not know that I am qualified to answer that broad question. Could you define it a little bit better?

Mr. HELLERMAN. All right.

In this case, a trimline telephone was sold—

Mr. McDERMOTT. It was not sold. I am sorry, Mr. Hellerman; that was the allegation.

Mr. HELLERMAN. What does the sentence, "The trimline sets were offered for installation under Alabama General Subscriber Services Tariff, section A14," mean?

Mr. McDERMOTT. What does it mean?

Mr. HELLERMAN. Yes.

Mr. McDERMOTT. It simply means we had a single payment option: that was all. There were no monthly amounts associated, but we still owned the equipment. It was under tariff.

Mr. HELLERMAN. In other words, the person could make one payment.

Mr. McDERMOTT. Yes.

A number of companies offer this in a number of installations, Mr. Hellerman, particularly on princess, trimline, and services like that. We have single payment options. We offer single payment options on the PBX, too.

Mr. HELLERMAN. I do not recall seeing an advertisement offering trimlines for single payments for residential markets.

Mr. McDERMOTT. Well, it has been publicized in the Bell System.

Mr. HELLERMAN. We have all heard many statements by your competitors, or would-be competitors, that A.T. & T. offers lower rates where they have great competition and higher rates where they have no competition.

How would you respond to that allegation?

Mr. McDERMOTT. I would say it is false.

Mr. HELLERMAN. How do you account for the differences in the rates across the country between the operating companies?

Mr. McDERMOTT. I can tell you very simply, Mr. Hellerman, that the difference of rates for various types of equipment across the country are a result of many factors, including the views that the local State commissions have as to how those rates should be set.

Mr. HELLERMAN. Thank you, Mr. McDermott; I have no further questions.

Mr. McDERMOTT. Thank you.

Senator HART. Mr. Chumbris.

Mr. CHUMBRIS. I have no questions: thank you, Mr. Chairman.

Senator HART. Thank you very much, Mr. McDermott.

[The following was received for the record. Testimony resumes on p. 4295.]

MATERIAL RELATING TO THE TESTIMONY OF
FRANK A. McDERMOTT, JR.

EXHIBIT 1.—*Prepared Statement of Mr. McDermott*

PREPARED STATEMENT OF FRANK A. McDERMOTT, JR., ON BEHALF OF
AMERICAN TELEPHONE & TELEGRAPH CO.

My name is Frank A. McDermott, Jr. I was Director of Sales Development reporting to the Vice President of Marketing of the American Telephone and Telegraph Company prior to July 1, 1974. As of that date I became Vice President and Comptroller of the New York Telephone Company. I have been employed by the Bell System for 38 years in responsible management positions, much of that time in sales and marketing areas. My educational background includes a Bachelor of Science degree from Fordham University School of Business Administration in 1946.

The purpose of my testimony is to describe Marketing and Sales policies and

practices of American Telephone and Telegraph Company and its operating telephone companies of the Bell System. In addition, I shall respond to allegations that certain marketing and sales practices of the Bell System are anti-competitive actions. Such allegations were made by witnesses who appeared before this Subcommittee and in letters and affidavits introduced into the record.

I. THE MARKETING AND SALES POLICIES OF THE BELL SYSTEM

One of the fundamental objectives of the Bell System's marketing policy is to provide communications service and products that are responsive to customer needs at rate levels that will promote a universal service available to all, consistent with a fair return to share owners. Competitive services are priced to cover relevant costs and to make a contribution above cost, to the degree that market conditions permit, to hold down the price of local telephone service.

We have been guided in this policy by the goal of universal service and the concept of responsibility for control of the network. We believe that these basic tenets of our business have served the public well and they have guided our actions regarding value pricing, quality of service, programs of innovation and cost reductions. The importance of these business principles is explained more fully in the statements of Mr. E. B. Crosland and Mr. Richard R. Hough being filed with the Subcommittee.

Competition, per se, has not changed our traditional marketing goals. Our marketing goals have long been and are still to provide products that are responsive to customer needs; good customer service performance that matches service expectations of all customers and a fair return to our share owners. A changing competitive environment, however, has caused us to take positive actions that are distinctly untraditional with our past, such as cost related pricing and departures from nationwide average pricing.

We have made it clear to all that the basis for this marketing policy in a competitive environment is the Bell System's right to compete. We are not going to stop serving any sector of our business—not the terminal area, not the private line area—where we are convinced—and can by our performance prove—that we can serve the public as well as or better than others in the field. Any other response would not be in keeping with what we believe is our reason for being—to serve the public better.

In the area of sales activities, a long standing policy of the Bell System is that a vigorous sales effort is required. At the same time, the Bell System has always recognized that the right to compete carries with it the responsibility to do so in a manner that is both ethical and legal. Our sales policies are based on the following principles.

1. The Bell System has the right to compete.
2. The Bell System has the right to compete vigorously until the customer is committed to a non-Bell supplier.
3. The Bell System will neither interfere with such commitments between its competitors and its customers nor engage in any acts of unfair competition.
4. The Bell System will continue to sell to its customers additional service and equipment supplementary to that furnished by competitive suppliers.

We believe that failure to sell aggressively would result in a deterioration of service to the disadvantage of the general telephone-using public and would detrimentally affect our employees and share owners.

Bell System Sales personnel have been trained to analyze customer needs for communication services and to recommend new and increased use of such services. Our objective has always been to make sure that what we do is in the customers' interest. To help assure that we achieve this objective, we apply the following criteria to our sales activities:

1. Only if the customer obtains added value should he buy.
2. Only if the value continues will the sale last.
3. Only if the sale lasts will the customer and the telephone companies profit.

The onset of competition and our response to it have not altered the basic sales goals of our business or the high sales standards with which it has been operated.

Sales Guidelines

The Bell System provides specific guidelines to its marketing and sales personnel in order that they may understand corporate and individual behavior

requirements in a competitive environment. These guidelines are communicated to Bell System sales personnel through marketing letters, training courses and antitrust review seminars, as described below.

Marketing letters.—Marketing letters from AT&T headquarters to the operating companies contain guidelines that are forwarded to marketing and sales heads and to heads of other departments, *e.g.*, commercial and plant. In addition, this material is incorporated into appropriate Bell System sales training courses. Some of the more important of these guidelines are described in Attachment A. The underlying letters supporting these guidelines are Attachments A-1 to A-4.

Additional support has been given to these guidelines by the management of Bell System operating companies. For example, such guidelines are initially reviewed by the marketing and legal staffs of each of the operating telephone companies. They are then sent to each line sales organization under a cover letter, signed by the marketing management person of authority, endorsing the contents and directing that they be followed in the normal course of business. To add special emphasis to these letters, a number of companies have established special training sessions at which sales managers and selected sales contact personnel receive special training as to the intent and meaning of the letters.

Training courses.—Attachment B is a summary of training courses provided to Bell System sales training personnel. These courses are conducted in all of the operating companies and are given to all new sales contact employees. As described in Attachment B, these courses cover introductions to products and selling techniques, also economic cost analysis, typical marketing strategies of competitors, and ways to evaluate competitive proposals.

Antitrust review.—In addition to formal directives and appropriate sales training, AT&T has developed an antitrust review program and seminars are currently being conducted throughout the Bell System.¹ The objectives of the seminar are to:

1. Enable employees to recognize business situations where antitrust considerations are present.
2. Provide employees information needed to properly handle many of these situations.
3. Strengthen an employee's ability to recognize when he or she needs the help of a specialist in complex situations.

The program format for the seminar now being given was developed particularly for management employees in public and contact positions. It has been designed to enable them to compete vigorously and legally in accordance with the letter and spirit of the law. These seminars also impress upon employees the importance attached by the company to antitrust law compliance.

As of July 1, 1974, 59,000 Bell System management employees had attended these seminars. It is expected that most management people will have attended the seminar by October 1974. The importance of this entire subject has been emphasized at every level of management in the Bell System.

We attempt to impress on every Bell System employee the need to adhere to the ethical and legal requirements set forth in the guidelines described above. It is our conviction that the failure to adhere to such requirements is detrimental to the public interest as well as to the corporate interest and should not be tolerated.

II. BELL SYSTEM RESPONSES TO ALLEGATIONS AND COMPLAINTS

During the Subcommittee hearings in June 1974, statements were made by witnesses, and letters and other documents were introduced into the record by the Staff, alleging anticompetitive behavior by the Bell System companies. At the outset, I wish to make clear that the Bell System has no policy supporting anticompetitive behavior and we do not purposefully act so as to undermine competitors.

For purposes of responding to the June 1974 allegations I have categorized them broadly as follows:

¹ Exhibit 1, Bell System Antitrust Review Seminar, Administrators Guide, to be supplied for the record.

- A. Failure on the part of the Bell System to introduce new key telephone, PBXs, ACDs and Call Restriction equipment that customers needed and wanted;
- B. Anticompetitive sales practices; and
- C. Anticompetitive tariff provisions such as: the requirement of an interface device, design, costing and pricing questions affecting interconnecting arrangements, and the pricing of key systems and PBXs.

A. The Bell System has Introduced Key Telephones, PBXs, ACDs and Call Restriction Equipment that Customers Needed and Wanted

Mr. T. L. Kelly, President of TIE/Communications, Inc., stated that Key telephone systems have not changed appreciably since their development in 1938 and that because of competition the Bell System has had to innovate for the first time in years. (Statement, p. 8, Tr. 1376.) Mr. T. F. Craver, Director of Trade Regulations, Litton Industries, Inc., stated that the telephone has remained unchanged for decades and that prior to the Carterfone decision the Bell System dictated to the customer the type of station equipment needed. (Tr. 1582-83.) These statements are examples of deliberate attempts to depict the Bell System as not very innovative and as still operating with terminal equipment of a vintage that indicates not much change has been made since Alexander Graham Bell said, "Mr. Watson come here, I want you."

Innovation is an evolutionary process in the fundamental sense.² The very basis of all major innovation in communications technology lies in the intrinsic knowledge of the technological and economic successes and failures of the past. Innovation stands on the shoulders of prior knowledge.

Prior to Carterfone (1969) businessmen in the United States had a significant and wide array of choices in terminal equipment and services, consistent with existing technology. In support of this view, I would like to highlight a number of significant developments in terminal equipment that have taken place over the years through Bell System efforts.

Key Telephone Systems and Associated Station Equipment

Contrary to Mr. Kelly's assertion, fundamental changes in key telephone systems³ have occurred since 1938, involving the cost, flexibility, speed and ease with which key telephone system functions are accomplished. A history of these developments, achieved by the Bell System, 1938-1974, is set forth in Attachment C.

In the 1930s there was little demand for anything more than a basic telephone on the businessman's desk. As the need for terminating additional lines developed, packaged wiring plans were introduced. These provided separate keys, equipment boxes and apparatus cabinets of fixed capacity to pick up, hold and signal a number of telephone sets and lines. The Bell System standardized about 30 of these packaged wiring plans.

Next, a family of key station arrangements called the 1A system was introduced which provided "The Key Telephone" with built-in switching keys along with equipment units remotely located to offer the customer flexibility in the number of line terminations and switching and signaling configurations. Evolutionary innovations developed during this period included: lamp signals incorporated into the sets so as to illuminate the line buttons; winking hold signals for held lines; dial selective intercom systems; and improved packaging, that reduced installation charges and maintenance costs. Another improvement was a similar looking system called the 1A2 which represented the emergence of new technology. The 1A2 system was introduced in 1964 and it enabled the Bell System to significantly update key telephone equipment through the use of solid

² For a comprehensive description of the new technologies, products and innovation developed by the Bell System, see Hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, U.S. Senate 93rd Cong., 1st Sess. on S. 1167, Part 2, The Communications Industry, ("Hearings"), pp. 1430, 1434. Prepared statement of Dr. J. A. Baird, Vice President, Engineering, AT&T; p. 1449. Book entitled "Impact: A Compilation of Bell System Innovations in Service and Engineering Which Have Helped Create New Industries and New Products" (Bell Telephone Laboratories); and pp. 1617, 1707. Supplemental Statement on Behalf of the Bell System—Part IV Innovation matters.

³ Key telephone systems involve facilities designed to pick up, hold and signal a number of telephone lines on a number of telephone sets.

state components, printed wiring boards and miniaturized relays that further reduced installation and maintenance costs.

Along with these developments, the Bell System again recognized the need for "packaged" key systems to meet specific customer needs. A package system called the 20-40 Dial Pak was introduced by the Bell System in the early 1960s for customers in the 15-40 station range that had a high volume of intercommunicating calls. Subsequently, the Business Interphone was made available for customers with a need for Hands Free Answering on Intercom and voice signaling.

Other important developments included: the first offering of automatic answering service (1A Telephone Answering System); the first station product to use transistors (3A Speakerphone); a station set to handle several incoming, outgoing and interoffice calls simultaneously (Call Director⁴ Set); a repertory dialer; and a Touch-Tone⁴ Set, which offered convenience and dialing speed to the customer at a reasonable price. Supplemental equipment that could be added or removed as required to meet special needs has also been developed, such as, transistorized Speakerphone, automatic answering service, automatic dialers, multi-button sets (10, 12, 18, 20 and 30 button models), Call Director sets and jack equipped Call Directors for use with a variety of headsets.

The Bell System has met the needs of key system customers with a multitude of features through the years. Yet certain persons appearing recently before the Subcommittee have boasted that their systems possess such "new" features as Hands Free Answer or Intercom, voice signalling and Music-on-Hold. The fact is that the technology required to provide all of the features offered presently by our would-be competitors was in existence long before 1969 and these features have been offered at various times in various arrangements by the Bell System.

Those who would compete with us have only packaged features and offered pricing options—they have not offered new technology under any accepted construction of that term. It is not surprising that some pricing options have not been available in some instances, since the Bell System has adhered to "value pricing" and "average pricing"⁵ traditionally under regulation.

Competitive entry has occurred particularly (a) in that part of Bell's product line where longer than average location life was involved or (b) in those situations where customers have sought to insulate themselves from potential future rate increases. As a response the Bell System has introduced cost-related pricing options such as Two-Tier pricing.

Two-Tier pricing is a cost-sensitive plan reflecting the greater operating economies and cost savings associated with equipment remaining in service for longer periods of time. The plan has two rate levels: a higher level for an initial "contract" period and a lower level for the remaining time. The first level, which might be in effect for from three to 10 years, covers the costs of service including the capital costs of the equipment. The second level covers the ongoing expenses of maintenance, administration and taxes, plus a reasonable contribution to earnings. Competitors have charged that this arrangement is predatory, or involves pricing below costs. The facts do not support that charge, however, since such pricing arrangements are designed to cover all relevant costs. Actually, the Bell System is simply adjusting its offerings and pricing to the needs of the marketplace.

Com-Key Development

A key system, known as Com-Key 718,⁶ was introduced by the Bell System in late 1973 and was followed by the Com-Key 1434⁶ in early 1974. The Com-Key systems serve customers in the 3-14 line range. The development of this system followed a 1972 internal Bell System marketing survey that analyzed key systems features desired by customers and competitive offerings. Along with feature requirements, the survey revealed an evolving market need indicating a desire for packaged systems (all lines appearing on all stations).

Bell Telephone Laboratories (BTL) then determined that a packaged system

⁴ Registered mark of American Telephone and Telegraph.

⁵ These terms and the regulatory concept supporting them are described in the statement of Mr. E. B. Crosland being submitted to the Subcommittee.

⁶ Registered mark of American Telephone and Telegraph.

could be developed that would largely utilize equipment already in production, achieve a desired economy of installation to offset rising labor costs and provide an attractive group of features at a reasonable price. Before making a final determination as to the size of the system, Bell considered systems of 2 lines and 5 stations, 2 lines and 10 stations, 4 lines and 19 stations and 7 lines and 18 stations. The 713 (7 lines and 18 stations) was selected.

The Bell System has been criticized during these hearings for developing its own system rather than using the TIE 1030 Key Systems (Tr. 1371). (The criticism was made by Mr. Kelly, President of TIE.) Mr. Kelly referred to the so-called "Fenton Report"⁷ which, he said, compared the TIE 1030 with the forthcoming Com-Key 718 and indicated the former to be "superior in price, features and overall performance . . ." (Statement, p. 10.) Mr. Kelly has misconstrued the Fenton Report. That report compared two systems to the TIE 1030. The first system compared was the existing Bell System 1A1 and 1A2 equipment. The second comparison was to equipment that either existed or was on the drawing board (for example, the two link multi-path intercom which has yet to be introduced). Since developmental work on the Com-Key 718 did not begin until the third quarter of 1972, the Fenton report, which was dated February 16, 1972, does not show the TIE 1030 to be superior to the Com-Key 718 in features and overall performance. Furthermore, the New York Telephone Company did compare the TIE 1030 with the Com-Key 718 in February 1974 and found that the TIE equipment has no "cost of feature advantage" over Com-Key equipment.

In regard to the development of Com-Key, there were some important reasons why the Bell System felt the need to develop its own product rather than incorporate the TIE 1030 or another available system into its product line:

1. The major component of Bell's key systems, including Com-Key, is the 400 type line circuit, of which the Bell System uses approximately two million per year. The line circuit used by the other vendors is incompatible with the 400 type. Hence Bell could foresee supply line, inventory, and administrative problems by mixing this unit into the product line.

2. The price to add the Touch-Tone option to the TIE 1030 would have rendered many of Bell's existing tariffs noncompensatory.

Work continues at BTL to provide new and additional features using key telephones. Currently being trialed is a system for customers with 4 lines or less, which offers a new line of key sets utilizing built-in logic. By building the logic into the set, the Bell System expects to realize substantial benefits particularly in the area of installation costs.

There is no substance to the charge that the Bell System has failed to provide its key telephone system customers new features and technology.

PBX Systems

Private Branch Exchange (PBX) systems provide for service requirements that exceed the capabilities of key telephone systems. Like telephone systems, Bell System development efforts have produced a significant, continual evolution in PBX concepts. Attachment D details the progress of PBX developments by the Bell System. Following, is a brief description of Attachment D.

Prior to 1930 the Bell System offered both manual and dial PBX systems to meet the needs of various sizes of business operations. Dial systems at that time were primitive by today's standards in terms of switching sophistication, feature availability, space requirements and efficiency.

In 1938 Bell introduced the first of several packaged PBX systems, the 755A. This cabinetized system offered features that are still popular today, but in comparison with subsequent developments the cabinet was large and could not be considered an asset to today's office decor. During the intervening years, dial systems were improved as switching technology progressed. The first cross bar switching PBX system, 756, was introduced in 1957. This system represented a major improvement in modular package design and also offered many new features such as camp-on, attendant direct station selection and station transfer. These features are basic to many of today's PBX services.

⁷ Bell Laboratories memorandum: Nitzuko/TIE 1030 System—Feature and Economic Evaluation as compared to similar Bell System offerings. F. M. Fenton, February 16, 1972. This memorandum was attached to Mr. Kelly's statement, Exhibit 17.

An entirely new PBX concept called Centrex was introduced by the Bell System in 1961. Features such as direct inward and outward dialing, coupled with automatic identified toll billing per line, were major innovations that helped users reduce PBX attendant costs and control usage billing. Further advancement in Centrex equipment design provided important station features such as individual call transfer, add on conference and consultation hold. Attachment E describes in detail these and other Centrex developments.

Centrex offers major space advantages to customers since all of the switching equipment can be located in the telephone company central office. In addition, utilization of electronic switching equipment facilitates the introduction of new user features through generic program (software) changes. Attachment F identifies available and currently planned features included in generic programs.

In 1963 the Bell System offered its first electronic PBX system—the 101 ESS. It featured a stored program common control located in the central office which controlled a number of time division switching units remotely located on different customer premises. Electronic switching, in addition to space saving advantages, was able to offer new features such as call forwarding, call hold and call pickup. These features represent a major development toward reducing the need for key equipment by transferring station feature control to the switch memory.

Bell System switchboard development paralleled switching development. Cord switchboards and key type consoles have been available since the 1930s. Bell has made changes over the years to reduce switchboard size, increase efficiency and attractiveness.

In 1948, two switchboards (555 and 607) were introduced for manual systems and one (607) for dial systems. In 1957, another switchboard (556) was offered for dial systems. These developments were supplemented by the 608 switchboard in 1960. The 608 combined the customary cord operation of switchboards with a new modern appearance and smaller size. Major console developments were also introduced in 1950 to meet changing business needs. Today, the Bell System offers some 30 different console switchboards.

This wide array of PBX, switchboard and console offerings is essential to meet the dynamic communications needs of the business customer. Recognizing these needs and providing services to match them in a timely manner has been and will continue to be the Bell System's objective. Based on our performance, as described in Attachments D, E and F, we believe the charge that the Bell System has failed to introduce PBX equipment and features to meet customers' needs is without merit.

Automatic Call Distributing Systems

One of Mr. Hellerman's questions to Mr. C. M. Huntley, Director, Telecommunications, Continental Airlines, suggested that the Bell System was unable to furnish its customers automatic call distributing (ACD) equipment (Tr. 1347). I disagree.

The special need to distribute large volumes of incoming calls to centrally located attendants was recognized by the Bell System in the early 1930s. At that time Bell offered manual call distributing equipment which consisted of key and cord answering turrets. Subsequent Bell System developments used step switches which were later replaced by cross bar switches to increase speed and reliability. Cabinetized systems were also offered to reduce space requirements and installation costs. These developments made it possible to introduce such features as automatic distribution of calls to attendants, call transfer, traffic measurements, and supervisory controls. These features helped improve efficiency and provided greater system flexibility.

The advent of the Electronic Switching System (ESS) added a new dimension to ACD development. It was obvious that this technology could offer significant system benefits in terms of reduced installation costs and space economy. Further, the use of ESS generic programs (software) would enable the Bell System to offer a wide array of new ACD features without major equipment changes. Accordingly, the Bell System decided to incorporate feature ACD system designs into the ESS development program. Attachment G details the history of Bell System ACD development.

Airlines are one of several industries that use ACD systems extensively. In

1972, the Airlines Coordinating Committee for Telecommunications Service (ACCTS) developed a concept for an electronic ACD with the assistance of representatives from the Bell System and communication terminal equipment manufacturers. Two cases exemplify the Bell System's response to the airlines' needs.

Prior to April 1973, Continental Airlines decided to purchase rather than lease their own ACD system for their Houston reservation center (one of four in the Continental System) (Tr. 1323, 1332, 1341). In view of this decision to purchase, Southwestern Bell did not submit a proposal for this project. In April 1973, Continental Airlines purchased a Collins "Galaxy" electronic ACD system for this installation. Mr. C. M. Huntley, detailed his experiences with this purchase and installation in his testimony before this Subcommittee. Through the cooperative efforts of Collins and Southwestern Bell, this system was placed in operation in May 1974. Attachment H is a letter from Mr. Huntley to Southwestern Bell which states, in part "... I want to comment on the outstanding cooperation and skill with which the telephone company (Southwestern Bell) . . . conducted and completed this job on schedule . . . this entire program has been an outstanding example of a cooperative development/installation effort by the Bell System operating company and a corporate customer."

In response to a question from the Subcommittee Staff concerning the quality or condition of Bell System provided trunks, Mr. Huntley testified that when the Collins ACD system was installed in Houston (May 1974, approximately 20% of the trunks were bad (Tr. 1347). Southwestern Bell records refute this statement and indicate an initial trouble rate of about 3%. Further, a review of trouble reports for the month of June 1974 reveals an average trouble rate of less than 1%.

Delta Airlines, in June 1973, issued system specifications to interested parties for a 250 position electronic ACD to replace their existing Bell 3A system in New York City. New York Telephone Company decided that the proposed No. 1 ESS ACD would not be available in time to meet this customer's installation date requirements. After assessing all available systems furnished by Western Electric and the general trade New York Telephone decided to bid for the Delta system and buy a Collins Galaxy ACD system to provide the service on a lease basis. New York Telephone's proposal was accepted and installation is scheduled for June 1975.

The history of Bell System call distributing equipment development, coupled with these details involving two customers who had special service requirements outside the board market requirements of business customers, demonstrates that the Bell System has provided and continues to plan for the specialized communications requirements of its customers. When the course of development does not coincide with unique systems or time requirements of a customer, the Bell System has used equipment from the general trade to meet such requirements.

Call Restricting Equipment

The testimony of Mr. R. L. Feiner, President, Phonetele, Inc., alleged that without competition, there would be no effective call restricting equipment available to the public (Statement, p. 10), and that telephone companies provided call restricting equipment only upon a customer's demand (Tr. 1476).

The Bell System has offered several call controlling options, including station restriction, call restriction equipment (many purchased from the general trade) and identified toll billing. Attachment I lists the various types of call restricting services available from a representative group of Bell System companies. Typically, these are desired by customers with PBX or Centrex systems.

We have also considered the question of call restriction for non-PBX/Centrex subscribers (mainly small key system users with up to 10 lines), however, this has not been an active market. Most of the small business market is less than 5 lines (84% of the customers are 4 lines or less) and the need for such services today relative to the cost to provide them does not appear to exist in any quantity. Moreover, the Bell System can provide billing arrangements that identify usage on a per line basis which usually meets the needs of most of these customers.

Historically the Bell System has encouraged the widest use of local and toll networks, and has introduced new technology and cost saving rate plans

(DDD, off-peak hour pricing, WATS, foreign exchange lines, etc.) so that users could make the most effective use of Bell's communications services. Call restriction is only one facet of telecommunications planning for efficient use of facilities by customers and is being met in a variety of ways to meet the specific needs of each customer. There is no single design or specification for call restriction which can practically and economically be used in all applications. The reasons for this are the variations in dialing patterns throughout the country, differing needs of customers and varying capabilities of central offices (e.g., step by step, panel, #1 and #5 type cross bar, electronic switching system and vintages of equipment within these equipment classifications).

In addition, almost all PBX and Centrex customers have Bell sales personnel and Business Service Advisors assigned to their accounts who analyze billing statements and conduct traffic studies for customers to maximize system utility, efficiency and economy.

Mr. Feiner stated that the installation of a Phone-master system in the Los Angeles County/USC Medical Center alone saved the County \$30,000 per month (Tr. 1476). The facts are that the installation of the Phonemaster and the installation of 76 Foreign Exchange circuits by Pacific Telephone contributed to the savings realized by the Medical Center. This installation was part of an overall plan that started in 1969 when Pacific Telephone began the implementation of a regional Centrex concept for Los Angeles County. Phase I scheduled Centrex service for the Los Angeles Civic Center in June 1973. Phase II scheduled the Los Angeles County USC Medical Center to be converted to Centrex in June 1974. Both installations feature Bell System call restriction service, utilizing foreign exchange lines and economic route selection. The Phone-master equipment (which Mr. Feiner referred to in his statement of June 25, 1974) was removed by the Medical Center in May 1974, on completion of the long planned for installation of Bell System Centrex service.

Mr. Feiner also stated that Pacific Telephone has not taken any steps to provide call restriction to the County or the Medical Center (Tr. 1477). This is incorrect, for the reasons described above. The fact is that Bell System call restriction equipment has been installed at 16 L.A. County locations since June 1968 (a list of the L.A. locations is set forth in Attachment J).

Mr. Feiner also alleged that the Bell System prevented Phonetele from marketing equipment and doing business outside the State of California for a period of four years (Tr. 1482, 1491, 1493, 1494). Again, Mr. Feiner's allegation is not supported by the facts. From the onset of Phonetele's introduction of the Phonemaster in November 1970, the Bell System has cooperated in the development of connecting arrangements to properly interface the Phonemaster with the telephone network.

In November 1970, Mr. Feiner contacted AT&T to arrange for development of a connecting arrangement for Phonetele's "Phonemaster" call restrictor. In February 1971, a Bell Laboratories exploratory design was submitted to Pacific Telephone. This design was developed into a connecting arrangement, designated ZZAGM, which Pacific Telephone offered in April 1971. Analysis of the early design ZZAGM by AT&T indicated that serious problems involving significant service degradation could result when applied to two way PBX trunks. Pacific Telephone was so advised and Bell Laboratories was requested to provide a new design overcoming the apparent shortcomings of the first exploratory design.

The unique Phonemaster call restriction function involves a significant departure from previous terminal type interconnection in that the circuit to the central office must be "opened" during the restriction interval. The connecting arrangement in effect is interposed in the trunk line in order to allow the customer provided call restrictors to function the way they were designed. It was apparent that significant service degradation could result if the connecting arrangement did not include adequate safeguards against these problems:

1. Network blockage due to incoming calls ringing into the open circuit during the restricting interval.
2. Simultaneous seizure of a trunk by a PBX station and an incoming call thus leading to potential false charging condition.
3. Malfunction of the customer equipment, which could put some or all the trunks out of service. This would be particularly serious on a busy PBX and lead to considerable customer adverse reaction.

Therefore new specifications were established, and the design and manufac-

ture were undertaken. In October 1972 a Bell System standard connecting arrangement, CTD, was introduced. The CTD provided for toll diversion in a manner standardized for similar service provided by the Bell System.

Phonetele, after review of the CTD connecting arrangement design, claimed that it did not meet their needs since it did not accommodate their special requirements. These "special requirements" involved the transmission of a distinctive call restricting tone, viz., the first four notes of Beethoven's Fifty Symphony (da-da-da-dum), generated within their equipment. The tone supplied by the CTD is a standard PBX busy tone which has been used for many years in the telephone industry.

Mr. Feiner officially notified AT&T in January 1973 of his rejection of the CTD, because of the special tone requirement and also because he wanted a connecting arrangement for Key Telephone System. Further negotiation with him in 1973 resulted in the provision of another PBX connecting arrangement specifically designed at AT&T for the Phonetele equipment. AT&T also provided an interconnecting arrangement for key systems specifically to work with his system, in October 1973. Thus, four connecting arrangements, specially designed for call restricting equipment, were made available to Mr. Feiner during the period November 1970 to December 1973.

Mr. Feiner, in testimony before this Subcommittee, has conceded that "the concern the telephone utilities have about network harm is a valid one" (Tr. 1482). He feels, however, that a properly constituted certification program would enable equipment to be attached to the network. The certification issue, which is tremendously complex, is discussed in detail later in my statement.

The Bell System will continue to cooperate with manufacturers (as we did with Mr. Feiner) to develop appropriate connecting arrangements now offered by the Bell System.

In summary, some thirty years before the Carterfone decision the Bell System offered a line of basic services and supplemental features to business market customers in terms of Key telephone, PBXs, call distribution, call controlling and call restriction equipment. Innovation by the Bell System prior to and since the Carterfone decision has occurred and has resulted in the improvement of existing service offerings and the reduction of costs.

The Bell System, not the interconnect industry, has provided the fundamental research and development effort that has culminated in the innovations which comprise the vast majority of the basic building blocks of modern user premises equipment. So far as we know, the interconnect industry has largely been engaged in reconfiguring or repackaging those building blocks.

The Bell System's research and development efforts have resulted in numerous significant inventions of benefit to people throughout the world. The Bell System holds a significant patent position in many areas of modern customer premises equipment, such as key telephone systems, data sets, PBXs, multi-frequency signaling and repertory dialers. The benefits of these patented inventions are available to interconnect firms and to all others through nondiscriminatory Bell System licenses.

Much more is involved in new product development within the Bell System than the scientific research that goes into producing products and gaining patent rights. A fundamental unity exists among communications terminals, transmission and switching equipment. This requires an extensive amount of coordination in order to develop an effective overall plan and arrive at the best long term cost-benefit decisions for the total system.⁹

Planning and coordinating the system of the future requires expertise. Such expertise involves estimates of when and where new services will be needed; forecasts of the frequency, length and direction of calls; and growth potential forecasts of uses of relatively new services. It is essential that there be coordination of design and manufacturing so that each new element of the system will function smoothly with existing and planned components. Within this framework, we believe Bell System innovations in the terminal equipment market has provided a wide variety of products and services to meet business customer needs.

B. The Bell System's Sales Practices are not Anticompetitive

The Subcommittee heard testimony from several witnesses who alleged the Bell System had engaged in certain anticompetitive acts. A number of letters

⁹ Hearings, p. 1430, prepared statement of Dr. J. A. Baird, Vice President, Engineering, AT&T.

and affidavits containing similar allegations were also introduced into the record. As pointed out previously, the Bell System does not condone anticompetitive behavior as a matter of policy or on the part of its employees. It has expended great efforts to assure that the behavior of Bell System employees is fully in keeping with the spirit and letter of the law. We are very concerned with allegations of this nature and have investigated each allegation. In reviewing some of the material placed in the record we found it difficult to distinguish between allegations and innuendos and between hearsay and fact. The material included such things as philosophical dissertations on how to best provide telephone service to the nation; unsigned documents which purported to be affidavits, a number of which were three to four years old; and documents which misrepresented facts and issues that had been considered by regulatory agencies or by courts. However, we have attempted to develop the facts surrounding each case.

For purposes of responding to the allegations, divided them as between (1) those made by witnesses appearing before the Subcommittee and (2) those made or implied in letters and other documents introduced into the record by the Subcommittee Staff. I will address some of these allegations in this statement and responses to the remainder are set forth in Attachments U and W to this statement.

1. Witnesses who appeared before the Subcommittee.—Of the witnesses appearing before the Subcommittee, Mrs. Julie Ashorn of Knox Travel, Mr. Wolfgang Thrun Chevrolet, Mr. James Massick of Truckweld, Mr. Theodore Craver of Litton and Mr. Ronald Fox of TPI alleged certain anticompetitive sales practices on the part of the Bell System and its employees. Each of the witnesses I mentioned has stated or implied that the Bell System utilized its position as a purchaser of goods and services to gain competitive advantage or in some cases as a punitive measure against those who purchased interconnect systems. Their allegations are addressed below.

Knox Travel—Mrs. Ashorn testified that in March 1974 a Southwestern Bell employee advised her to book borrowed employees on airlines other than Continental whenever possible because Continental had installed non-Bell equipment. My investigation revealed that Mrs. Ashorn was given that information by an employee acting solely on his own. Southwestern Bell has indicated, however, that during the first five months of 1974 they have spent \$75,000 with Continental Airlines. Approximately \$49,000 of this amount has been booked with Knox's International Tours, of which \$40,000 has been booked since March 1, 1974—about the time Southwestern Bell's employee, acting on his own, made his comment to Mrs. Ashorn. Mr. Huntley, responding to a question from Senator Hart regarding this incident stated: "I do not believe that to be the policy of Southwestern Bell I think that was perhaps an unfortunate statement made by a low level supervisor." (Tr. 1334.) Mr. Huntley's analysis was correct.

Thrun Chevrolet—Mr. Thrun stated that his managers were informed by Northwestern Bell employees that they were told by the Telephone Company Credit Union (which is not affiliated with the Company) to buy cars from dealers who had Northwestern equipment. My investigation revealed that a Thrun salesman called the Credit Union early in 1974 requesting the Credit Union to direct its members to trade with Thrun Chevrolet. He was advised that it was not the policy of the Credit Union to recommend specific dealers. My investigation does not support Mr. Thrun's allegations.

Truckweld—Mr. Massick of Truckweld stated that Pacific Northwest Bell stopped purchasing new equipment from him or utilizing his shop for repairs. He cited a remark allegedly made by a lineman of Pacific Northwest Bell to the effect that Pacific Northwest Bell was removing a piece of equipment under repair because Truckweld had purchased non-Bell equipment.

There has been no change in Pacific Northwest Bell's business relationship with Truckweld. Truckweld is considered a source of products and services when those products and services meet the needs of Pacific Northwest Bell and are comparably priced with other suppliers. As Mr. Massick has pointed out, Pacific Northwest Bell's transactions with Truckweld have fallen off since 1970, but several factors have contributed to this. Since the Boeing Aircraft Company downturn in 1971 and due to other business factors, Pacific Northwest Bell has cut back generally on expenditures. In addition, in 1973 Truckweld lost three separate franchises for items normally utilized by Pacific Northwest Bell (Champion Rodders, Hobe-Davis and Utility Body and Equip-

ment). We feel that Mr. Massick's concern over Pacific Northwest Bell's purchasing policy is based on the unfortunate remark allegedly made by Pacific Northwest Bell nonmanagement lineman, which remark does not represent company policy.

Litton—Mr. Craver has placed in the record several allegations of reciprocity. In one case, Mr. Craver's own exhibits refute the allegation. Exhibit C-3 to Mr. Craver's testimony consists of a letter from a Litton representative to the President of International Harvester implying that International might be afraid to buy his product because it might hurt their sales to the Telephone Company. His Exhibit C-2 is a letter from a Vice President of International Harvester to the Litton representative stating clearly that International Harvester "investigates all alternatives without regard to the potential use of their product by suppliers." Litton's Exhibit C-1 is an intra Company Litton memo in which the Litton representative, in spite of the clear statement of policy by a Vice President of International Harvester, chooses to advise that International Harvester is afraid to purchase from other than the Bell System. Mr. Craver's exhibits do not support his charge.

Mr. Craver has placed in the record (his Exhibit A) a letter dated July 3, 1973 from John W. Angus, Vice President of Thomas E. Wood, Inc. to a Litton representative stating that Cincinnati Bell has advised Thomas Klinedinst, President of Thomas E. Wood Insurance Co., that a change in telephone service suppliers would have a detrimental effect on their business relationship. Attachment L to my statement contains an affidavit of Mr. Klinedinst, stating that none of the representations made in Mr. Angus' letter with respect to conversations with Cincinnati Bell are true.

In addition to the allegation of reciprocal purchasing practices described above, Mr. Thrun also alleged that Northwestern Bell offered him price reductions and assignment of a special repairman if he stayed with Northwestern Bell. Mr. Thrun stated that Northwestern Bell offered to install the Sound, Inc. system for \$12 per month less than the price in the Sound, Inc. proposal. My investigation found no basis for those allegations. The Northwestern Bell representative did offer Mr. Thrun the option of paying the installation charges over a 12 month period—an option available to other customers.

My responses to other allegations made by Mrs. Ashorn, Messrs. Thrun, Massick and Craver are included in Attachment M.

TPI Inc.—I would now like to address my remarks to the statement, testimony and Exhibits submitted by Mr. Ronald B. Fox, of TPI, Inc.

Mr. Fox states in his opening remarks that he resigned from Michigan Bell in February 1971, after becoming disillusioned with the anticompetitive tactics being used daily and the prevailing atmosphere of paranoia relative to interconnection. Attachment N of my statement is a copy of Mr. Fox's letter of resignation, which contains unsolicited comments on his career with Michigan Bell. The letter states in part: "... It has been my pleasure . . . to work under the supervision of highly qualified and competent people who have barred no hold to contribute to and assist in my progress in the business and development as an individual."

Mr. Fox's charges of anticompetitive tactics on the part of Michigan Bell are not supported by my investigation. For example, Mr. Fox alleges that Michigan threatened several charitable organizations with the discontinuance of grants if they used private equipment. He mentions the specific cases of Calvin College, Albion College and the Battle Creek "Y." He alleged that Michigan Bell asked for their grant back after the "Y" bought an interconnect system. My attachment O includes:

A. A record from 1958 to 1974 of Michigan Bell's contributions to member schools of the Michigan Colleges Foundation (which includes Calvin and Albion). A similar list, sworn to by Mr. William E. Ebben, Vice President, Michigan Bell Telephone Company, is set forth in my Attachment T, Exhibit 33. This shows that Michigan Bell's contributions have been made consistently through the years without regard to ownership of telephone equipment.

B. A signed affidavit from the Director of the Battle Creek "Y" which states that Michigan Bell continued its grant program in the amount of \$6000 after the "Y" purchased TPI equipment.

My investigation was not the only one which discredited Mr. Fox's allegations before this Subcommittee. Attachment P contains an article from the Detroit Free Press of June 26, 1974. The newspaper made its own investigation

and found at least three of Mr. Fox's allegations, including the one about Calvin College, to be incorrect.

In the case of Calvin College, Mr. Fox submits a chronology of events that is both misleading and distorted:

He alleges that Michigan Bell offered to furnish a Centrex system at a rate of return below desired levels and below that provided by tariff. The facts are that Michigan Bell offered to provide Centrex at its tariff rates—the only rates it is authorized by law to charge.

Mr. Fox accused Michigan Bell of refusing to provide rates for the interconnection of a privately owned Centrex. The facts are that the specific request for Centrex interconnection was made September 21, 1972—2½ years after Mr. Fox claimed it was made and the rates were provided March 27, 1973. To date, Mr. Fox has not placed an order for service under these rates.

Mr. Fox claimed Michigan Bell refused to sell cable for less than 700% of the retail price. That claim is erroneous. The facts are that Michigan Bell has sold over \$99,000 of cable to others, including \$6,000 worth to TPI. The price of such cable is based on reconstructed cost new less physical and functional depreciation—which generally represents the current costs of installed cable.

Mr. Fox states that Michigan Bell uses the "termination charge" in a discriminatory manner, citing an alleged waiver of the charge in the case of Mansco Supply if the customer stayed with Bell. The customer decided to stay with Bell, and was properly billed and subsequently paid the appropriate termination charges of \$632.55.

Mr. Fox accuses Michigan Bell of "Unhooking"¹⁰ in the case of Van Ess Construction by threatening the customer with loss of Bell's business. Attachment Q to my statement is an affidavit of Mr. Russell Kniff, Treasurer of Van Ess Company stating, "The reason for cancelling my contract with TPI Systems was solely my own decision. It was based on observations and some conjecture on my part of current and future possible maintenance problems. In no way was I intimidated, coerced or threatened the loss of contracts from Michigan Bell Telephone Company by their representatives."

Mr. Fox alleges that Michigan Bell caused TPI to lose a \$140,000 sale to Westdale Realty by actively pursuing the case after TPI has signed contract with the customer. Attachment R is an affidavit signed by Leonard L. Westdale, President of the Westdale Company, which states that there never was a contract between his firm and TPI and that Michigan Bell's presence in the negotiations was due solely to his request.

Following publication of Mr. Fox's testimony in a local newspaper, Mr. Orson E. Coe, President of Orson E. Coe Pontiac, Inc., sent Michigan Bell letter refuting Mr. Fox's statement that Michigan Bell employees were urged to boycott Mr. Coe's firm. Attachment S is a copy of Mr. Coe's letter.

Further evidence of the fact that Mr. Fox's allegations were incorrect and misleading is set forth in Attachment T. This attachment is a 7-page rebuttal of Mr. Fox's allegations and has been attested to by Mr. William E. Ebben, a Vice President of Michigan Bell Telephone Company.

2. *Material placed in the record.*—In investigating allegations made and implied in the letters and documents placed in the record by the Subcommittee Staff, we have separated them into two categories—specific allegations of anticompetitive behavior and general allegations questioning policies of the Bell System.

Specific Allegations

Those specific allegations of anticompetitive behavior which could be identified were classified under the following categories: Reciprocity; harassment; unhooking; discrimination; misrepresentation; premature announcement; and disparagement.

I have investigated all of these allegations and my response to each is set forth in Attachment U. In this section of my statement I have selected a few examples to give the Subcommittee an overall view of our findings.

Reciprocity—In the category of reciprocity, Internal Medical Clinic submitted a letter stating that a Northwestern Bell employee wrote a note on a personal bill she had received from Internal Medical Clinic. The note on the bill, which was entered into the record stated:

¹⁰ Inducing breach of contract.

"I'm paying this bill against my better judgment. To have an 03 code jump from \$10 to \$25 is ridiculous, plus what you did to the Company I work for, I did not like."

Northwestern Bell contacted the employee, Irene Barrett, on June 28, 1974 and asked her about the note. Her statement was as follows:

"I went to the Internal Medical clinic for a physical. This was on my own and had nothing to do with the Telephone Company. Internal Medical Clinic sent the result of my physical to the Telephone Company and tried to charge the Telephone Company \$15 for the information. This made me mad and I wrote the note to tell them so.

"I was upset with the way I was treated at the clinic and wrote them the note. I did not know the clinic had changed telephone systems until June 28, 1974, when I was told of the change."

As is evident from this statement, there was no relationship between the note and the fact that Internal Medical Clinic purchased non-Bell equipment.

In another case, Scautub Insurance Co. of Schenectady, New York submitted a letter alleging that a list of interconnect customers was being circulated in New York Telephone Company and as a result a Bell System employee purchased insurance from another company. An investigation of the matter by the New York Telephone Company revealed that the company has issued no such list and that the employee named in the Scautub letter had experienced difficulty with Scautub's claim service. The employee's decision to purchase insurance elsewhere was based solely on his personal preference.

Some of the allegations made in letters placed in the record lacked the specifics required to investigate them thoroughly. For instance, Telerent Leasing Corporation alleged that Helmholt Motor Company in Raleigh, North Carolina was receiving calls from "Southern Bell employees" who reminded the customer that 60 trucks had been purchased the previous year. Southern Bell has no knowledge of such calls. The lack of specifics limits the degree to which we can investigate this type allegation.¹¹ The Bell System is opposed as a matter of policy to reciprocity in any form.¹²

Harassment—The next category I would like to discuss is Harassment. Private Telecommunications, Inc. alleged that a wrong number was assigned to Paratone, Inc., Countryside, Illinois, to harass the company after it purchased competitive equipment. Investigation reveals a clerical error was made when the number was assigned and Illinois Bell reimbursed the customer \$1,019.74 for stationery that was printed in the interim with the wrong number appearing on it.

In another case, Western Machinery of Phoenix, Arizona indicated in a letter to Arcata Communications that their long distance bill was "mixed up" to such a degree that it was difficult to interpret and questioned whether this was done intentionally because they had interconnect equipment from other suppliers. Mountain Bell has investigated this case and found that a customer record and billing conversion was taking place at the time and some billing problems were generated as a result of the cutover to the new system. Certainly, there was no attempt to present the customer with an erroneous bill.

Unhooking—In the "unhooking" category, Gulf States Telephone Company, Inc. alleged that Southern Bell attempted to persuade Thrifty Traveler, Inc. to break a contract for the installation of an interconnect system. Southern Bell's records indicate that, in fact, the customer had signed a contract with Southern Bell for a new system prior to the date of the contract obtained by Gulf States. There was no attempt by Southern Bell to have the customer break the contract with Gulf States. If anyone was guilty of "unhooking", it was Gulf States.

In another "unhooking" allegation, Private Telecommunications, Inc. stated that Illinois Bell made a counter proposal to Bachi, Inc. Itasca, Illinois, after a contract with Private Telecommunications, Inc. had been signed. In this case Bachi specifically asked for Illinois Bell's proposal. Attachment V contains a

¹¹What is clear, however, is that this and many other allegations were not verified before being placed in the record of these hearings.

¹²John D. deBettis, Chairman of the Board of AT&T, has stated to the presidents of each of the operating companies, that "... reciprocity will not be tolerated in the Bell system." Bell System Antitrust Review Seminar, Administrator's Guide, Tab 21, p. 13 (February, 1974).

letter from Bachi to Illinois Bell releasing it from any liability in this matter.

Discrimination—In the category of "Discrimination", Gulf Corporation of Panama City, Florida claimed that it was denied a 3 line rotary group on their interconnect system. Further, it claimed that a "Bell representative" called and offered a 3 line rotary group if the customer would buy Bell equipment. Southern Bell's investigation established that at the time the initial request was made only 2 line rotary groups were available. However, a 3 line rotary group was furnished as soon as it was available. No reference to the use of Bell equipment was made when the customer was so notified.

Telecommunications System's discrimination allegation regarding the refusal of TOUCH-TONE service to John Hancock Life Insurance Co. in Nashville, Tennessee is another example of an erroneous charge. TOUCH-TONE service was not available in the customer's central office at the time it was requested. This customer, as well as other customers desiring TOUCH-TONE service, was placed on a waiting list and given the TOUCH-TONE service when it became available.

Misrepresentation—Under the "Misrepresentation" category, Eastern Telephonics, Inc. alleged that a cash flow comparison of their proposed system and a New York Telephone Company proposal for Michael Rosenthal and Company, New Rochelle, New York, was erroneously prepared so as to mislead the customer. New York Telephone's analysis of the cash flow did uncover some errors (installation charges were understated by \$110). The analysis also uncovered errors that Eastern Telephonics had made in their evaluation of the cash flow (installation charges were understated by \$375). There were two cash flows submitted, one for the customer's existing location and one for an expanded operation at a new location.

Premature announcement—In the category "Premature Announcement", Sound, Inc. alleged that Northwestern Bell gave literature and rates on the Com-Key 718 system to the firm of Diehl, Clarkson and Sizemore, Iowa City, Iowa, prior to the filing of a tariff on the system. Our investigation and conversations with Mr. Diehl indicated that Northwestern Bell did not misrepresent the facts on the system. Though brochures were left with the customer and tentative rates discussed, the customer was told specifically that the system rates were subject to a tariff filing with the Iowa Public Utilities Commission.

Disparagement—There were five allegations identified pertaining to the disparagement and our responses are described in Attachment U.

General Allegations

In reviewing the general allegations placed in the record, most were third party or hearsay in nature, we have classified each allegation in one of the following categories: Harm; service quality; pricing; sale of inside wiring; and availability of connecting arrangements.

I would like to review some examples of my responses to these allegations.

Harm—In the area of "Harm", Essential Communications, Inc., has alleged that a protective device (interface) should not be required for customer provided Code-A-Phone equipment connected to the Bell System network because New Jersey Bell Telephone Company provides the exact same equipment to their customers under a tariff filing without a protective device. It is true that network protective devices are not required if Code-A-Phone equipment is provided by New Jersey Bell Telephone Company under filed tariffs, because the equipment is purchased, installed and maintained by New Jersey Bell. Protection devices are required to protect the network from, among other reasons, the potential of faulty installation and improper maintenance.

Service quality—In the area of "Service Quality", Arcata Communications has alleged that American Hospital Supply Co. of Bedford, Massachusetts, experienced "poor" service, from New England Telephone and Telegraph because they were an interconnect customer. The specific problems cited were "frequent drop offs and poor transmission". Investigation indicated that New England Telephone and Telegraph provided the same response to the service difficulties reported by American Hospital Supply Co. as they provide to any customer. More significant, our records show that Arcata Communications equipment was improperly grounded which precipitated the "drop off problem". Our transmis-

sion tests found all of our trunks (lines) to be within technical parameters with one exception which was corrected.

In another case involving "Service Quality", Business Communications, Inc. (BCI), Detroit, Michigan has alleged gross inefficiency and negligence by Michigan Bell Telephone Company in performing service to equipment associated with interconnect telephone systems (four cases were identified, Condamatic Company, Hovis Screwlock Company, Arkin Distributing Company and Far Eastern Gospel Crusade). Investigation of the complaints associated with each of these cases indicates that Michigan Bell personnel did everything possible to assure quality service to these customers. In three of the four cases, service completion was delayed either by the customer or by BCI. In the fourth case the service date was met.

Private Telecommunications, Inc. (PriTec), Chicago, Illinois, alleged that Associated Vendors, Maywood, Illinois had experienced installation service problems on two voice grade channels and two signal grade channels. Investigation by Illinois Bell Telephone Company revealed installation of the requested service was indeed delayed, because PriTec initiated several changes to the original service order.

Pricing—In the category of "Pricing", Sawyer Communication Consultants, Inc., Portland, Oregon, alleged the Oregon Public Utilities Commission recently approved rate increases for Pacific Northwest Bell which effectively juggled rates around—a decrease here—an increase there—which tended to lower rates for business equipment but raised rates for lines to aid PNB's competitive position. We deny this allegation. PNB's petition for change was intended to adjust rates for services to more closely reflect the cost to provide such services.

TI Electronics (Telephone Sales, Installation and Service) Jackson, Tennessee, alleges that South Central Bell Telephone Company violated the Consent Decree by offering to sell Trimline telephones to Brookwood Hospital in Birmingham, Alabama. The Trimline sets were offered for installation under Alabama General Subscriber Services Tariff, Section A14, which is not in violation of the Consent Decree.¹³ The tariff provides a single payment option charge of \$78.00 in lieu of the \$1.32 monthly charge. Depending on the circumstances, a customer may find a single payment option beneficial. This option, which does not constitute a sale, is offered in other Bell companies, as well, allowing customers an alternative to recurring monthly charges.

Sale of inside wiring—Included among statements pertaining to "Sales of Inside Wiring", Sound, Inc., Cedar Rapids, Iowa, alleged that Chet Elson Insurance Agency requested and never received a quotation for purchase of inside wiring. Investigation indicated that a quotation was provided to Mr. Elson, in person, and to Sound, Inc. by telephone. The Northwestern Bell offer was refused and the cable was removed.

Gulf States Telephone Company, Mobile, Alabama, alleged South Central Bell Telephone Company attempted to sell abandoned house wiring to the new owner of the Trade Winds Motel, Biloxi, Mississippi. Investigation of the allegation revealed the house wiring in question had not been abandoned. Rather, the premises in question had been foreclosed, and when the new owner decided two years later to install interconnect equipment the house wiring was offered for sale.

Availability of connecting arrangements—In the area of "Availability of Connecting Arrangements", Cousino Communications, Inc. alleged that Ohio Bell failed to provide the connecting arrangement for installation of interconnect equipment for Central Travel and Ticket, Toledo, Ohio, even after confirming the date. Review of the installation reports of Ohio Bell indicate that the commitment date was indeed delayed by nine (9) days. The missed appointment was due to a misdirected shipment of this particular connecting arrangement.

As in the case of the specific allegations of anticompetitive sales behavior, these general allegations are also unfounded and in no way do the facts relating to these cases indicate any effort to prevent interconnect companies from providing their services. My response to all other general allegations is contained in Attachment W.

¹³ United States of America v. Western Electric Company, Incorporated, and American Telephone and Telegraph Company, Civil Action No. 17-49, U.S. Dist. Ct., Dist. of N.J. (January 24, 1956).

With respect to MCI's allegations of anticompetitive activities on the part of the Bell System companies, introduced by the Staff in these hearings, these matters are currently under litigation before the United States District Court for the Northern District of Illinois, Eastern Division. In a civil action brought by MCI these allegations have been denied, and since they are now an issue before the court it would not be proper for me to address those issues in the context of these hearings.

The material placed in the record, to which I have responded in this section of my statement, consists of 121 cases. Except for 4 isolated incidents, I have discovered no evidence of anticompetitive behavior on the part of any Bell System company. The 4 exceptions involved employees who, acting on their own, made statements or took actions not in accord with our corporate policy. The Bell System has a million plus employees. It should be recognized that in isolated instances some errors of judgment may occur.

We do not wish to minimize in any way the serious nature of every anticompetitive allegation. It should be noted, however, that after nationwide solicitation for such cases by the Subcommittee Staff, 121 allegations were introduced into the record. Of this number 17 were submitted by 8 interconnect customers, and the remainder were submitted by interconnect companies. Of the 104 allegations submitted by 24 interconnect companies, 7 companies (Business Communications System, Inc., Gulf States Telephone Company, Sound, Inc., Midwestern Communications, Inc., and Century Business Communications, Inc., Litton, Inc., TPI, Inc.) submitted 72 allegations or 69% of the total.

In view of the fact that there are more than 250 interconnect companies, about 20,000 interconnect customers, and over 340,000 connecting arrangements in service in the United States, clearly the few allegations presented to this Subcommittee are not representative of Bell System performance. Indeed, the conclusion to be drawn is that the Bell System's policy of fair competition and its program to implement this policy have been generally successful.

C. The Bell System Requires Connecting Arrangements to Protect the Network. The design, costing and pricing of such Connecting Arrangements is not Anticompetitive. The Bell System does not price below cost for Key Systems and PBXs

Connecting Arrangement Requirements

Some witnesses before this committee have challenged the need for connecting arrangements (C/As) to protect the network, alleging that they are not required at all, are over designed, are too costly, and priced above costs. Alternatively, some witnesses suggested that if protection of the network is needed, it could be achieved through some sort of certification program.

The National Academy of Sciences Panel, pursuant to a request by the Federal Communications Commission, considered whether there was a need to protect the network and concluded in its Report to the FCC¹⁴ that interconnection of customer-owned equipment could harm the carriers' network and their personnel, and that the use of C/As as well as the tariff requirements for minimum protection criteria are valid and reasonable in order to protect the network.

The Panel's Report evidences a thorough study of the many difficult and important technical questions involved in the connection of customer-provided equipment to the public telecommunications network. As a result of this extensive study the Panel reached two basic, unequivocal conclusions:

(i) the need for protection against uncontrolled interconnection has been established, and certain technical limitations in the connection of customer-provided equipment are necessary; and

(ii) the present tariffs are an acceptable approach to providing this essential protection for harm to personnel, property and network performance and, from a technical point of view, the tariff requirements for minimum protection criteria, telephone company furnished connecting arrangements and network control signalling units are valid and reasonable.

¹⁴See "Report of A Technical Analysis of Common Carrier/User Interconnection" (NAS Report) made by the Special Panel on Common Carrier Interconnection of the National Academy of Sciences' Computer Science and Engineering Board (NAS Panel), which was released by the FCC with its Public Notice No. 51094, dated July 1, 1970.

Some witnesses look at the present tariff regulations from a parochial, self-interest point of view. These partisan approaches are understandable, however, their proposals threaten to impair the integrity of an irreplaceable national asset. The value of the public telecommunications network to the country and to the economy as a whole is beyond question. This fact should be of paramount concern when radical changes affecting it are considered. Interconnection tariff regulations seek to safeguard the network, the people exposed to it, and the interests of *all* users. The NAS Panel, which accepted and supported these regulations, did not favor any particular viewpoint or position. It impartially took into account the views and needs of users, manufacturers and common carriers. The Panel's conclusions unquestionably were intended to, and do, serve and foster the long-term interests of the nationwide network and *all* telecommunications consumers. The question of connecting arrangements, certification¹⁵ and the economic impact of competition is presently under intensive investigation by the FCC and others.

Rates for connecting arrangements are designed to recover all relevant costs. These costs include those for material, maintenance, administration, cost of money and property and income taxes. The rates recover these costs through a one-time charge at the time of installation and a monthly recurring charge based on the estimated location and service life of the connecting arrangement. In this way, the user of the equipment rather than the general body of telephone customers bears the cost of the connecting arrangement.

Some witnesses before the Subcommittee have alleged that connecting arrangements are "over designed" and "over priced." However, they offered no support for such observations other than the unsupported claim that Bell System prices are unreasonable in relation to the price of their equipment. Obviously no reasonable relationship exists between the tariff charge for a connecting arrangement to protect the network and the cost of a customer-provided device connected to the network. In any event these allegations of "over designed" and "over priced" are unsupported and untrue.

Bell System Pricing Policy

The present high standard of telecommunications service and its contribution to the economic and social development of the country are attributable in no small measure to the pricing policies followed by the Bell System under regulation which have enabled it to serve the nation well. It is the Bell System's aim and the goal of regulations to establish rate levels that will promote a universal service available to everyone at reasonable prices. With respect to competitive services, the objective is to price competitive services so that each service not only covers its relevant costs but also contributes as much to total earnings as is reasonably practicable, taking into account market conditions, rate relationships, and other factors. In this way, the contribution which each of these competitive services may make to overall common costs benefits the users of its basic services and holds down the price of local telephone services.

In these hearings Mr. T. F. Craver of Litton Industries, Inc. alleged that the Bell System companies are pricing below costs. He reviewed two Pacific Telephone rate advice proposals (Statement, pp. 50-55), one dated September 1972 and the second dated May 1974 for the 770A PBX. His conclusion was that the Bell System companies are pricing below costs since the May 1974 proposal indicated higher rates than the September 1972 proposal. The facts are that the September 1972 770A proposal was based on the best available cost estimates and data at that time. This first rate proposal was withdrawn by Pacific Telephone on May 2, 1973 in order to complete collateral studies supporting the offering. Litton Systems, Inc. concurred in this action. The proposed rates of May 1974 reflect the results of these studies. Contrary to Mr. Craver's allegation that the 770A PBX rates were too low to cover costs, the cost meth-

¹⁵ Regarding certification, the National Academy of Sciences Panel has recognized that an adequate certification program could provide sufficient protection for the network. The Panel specified the requirements it considered essential to such a program. The FCC and several state commissions currently are considering certification as a means of protecting the network. The Bell System is participating in those proceedings and has thoroughly analyzed all proposals submitted and concluded that none of them embody all of the elements specified by the NAS Panel as essential to an adequate certification program and they are deficient. See Hearings, p. 1659, Supplemental Statement on Behalf of the Bell System—Part II Terminal Equipment Interconnection.

odology used by Pacific Company included all relevant costs and a rate of return objective of 9.5%. (The overall allowable rate of return for Pacific Telephone and Telegraph in California is less.) Differences in rate levels are accounted for by (1) increases in installation and maintenance activity indicated by actual experience, and (2) increased wages and material and other costs due to inflation over the study period.

Mr. Craver's comparison of rate structures between the Pacific Company and the Southern Bell Company, and his allegation that a rate level for a particular service in one rate jurisdiction is below cost because it is lower than a rate level in another jurisdiction is not supported in his statement. The facts are that the Southern Bell rates cover all relevant costs, and that neither company, Pacific nor Southern Bell, priced its 770A below costs.

Another factor is the development of these rates is the California commission policy that at least 50% of the nonrecoverable costs must be recovered by an installation charge. No such requirement has been imposed by the commissions that regulate Southern Bell.

Mr. Craver alleged (Statement, p. 56) that Michigan Bell placed a disproportionate burden of its rate increase (Case #U4293) on residence customers (89%) and only 11% of the requested increase was derived from business services. The facts are that approximately 58% of the total dollar increase granted was borne by business customers. The average increase to business customers was 4.3%: the average increase to residential customers was 3.3%. Key and PBX rates were increased 11% more than the average business increase. This 11% figure is probably the one that Mr. Craver erroneously concluded was reflective of the portion of the total increase applicable to business customers.

Included in this same Michigan rate case was a restructuring of key system rates to which Mr. Craver objected (Statement, p. 57). Michigan Bell's testimony in this case showed the effect of restructuring a wide variety of key system arrangements. This restructuring was cost related for each key system configuration to ensure that customers would pay for the equipment required to provide such service. The Michigan Commission found that the "... proposed rate structure is not discriminatory. . . . The rates approved by this order will not burden basic telephone services of Applicant and have been assigned adequate costs based upon evidence, testimony, studies, and data found to be reasonable."¹⁶

Mr. Craver also alleged that Southwestern Bell's rates for certain PBX services were packaged so as to effectively force their trunk service customers to use their PBXs (Statement, p. 58). As Mr. Craver stated, Litton has instituted an antitrust suit against Southwestern Bell in this matter and, accordingly, it would not be proper for me to address in this hearing any issues now pending before the court.

On the matter of Western Electric pricing practices as to which Mr. Craver has made certain allegations, the Bell System has filed with the Subcommittee the statement of Mr. John Brown, Vice President of Western Electric. Mr. Brown refutes these allegations of Mr. Craver's and explains in detail Western Electric's pricing procedures.

Conclusion

We believe the Bell System has demonstrated during these hearings an unparalleled record of innovation in customer premise communication equipment and services. This record of innovation has always been based on technological advances, customers' needs and economic considerations in the marketplace.

The Bell System does not have and does not condone any policy of anticompetitive behavior. We have demonstrated that to be true in the record of these hearings. Our sales practices are explicit as to our desire to compete aggressively in an ethical and legal manner. Customers who buy terminal equipment from other than Bell System companies are still Bell's customers for other telephone company services. There is no place in the Bell System for employees, management or nonmanagement, who engage in unethical or illegal activities. Any employee who disregards our explicit directives in this area is subject to disciplinary action.

¹⁶ Re Michigan Bell Telephone Company, Case No. U-4293, Opinion and Order of Michigan PSC, p. 40 (Dec. 21, 1973).

We deny that we have priced our products or services below cost or in a predatory or anticompetitive manner and we believe we have documented this fact during these hearings. We have defined the Bell System's response to competition as ethical, legal, aggressive, innovative and responsive in the area of product development and pricing options. Our responses to competition have been subjected to scrutiny by local and state commissions and by the FCC in formal and informal hearings.

The Bell System's accomplishments reflect unparalleled excellence in research and technological development, superior manufacturing ability and a management that is dedicated, innovative and uncompromising in its objective to produce the finest communications services at reasonable prices.

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Attachment A

DESCRIPTIONS OF SOME OF THE BELL SYSTEM MARKETING GUIDELINES

1. Letter to Company Marketing Heads dated May 13, 1969 on the subject of Marketing in a New Competitive Climate. This was a 34 page paper prepared by our Legal Department which provided guidelines for making decisions about those things which we can or cannot do in competing with other suppliers. Attachment A1.

2. Letter to Company Marketing Heads dated June 25, 1971 (GL71-06-246) providing guidelines for negotiating with independent consultants and customers in competitive sales situations. Letter deals with establishing the authority of private communication consultants to act for customers, dealing with customers who have engaged private consultants and providing information to customers and consultants regarding customer services. Attachment A2.

3. Letter to Engineering Staff Heads, Operating Vice Presidents, Company Marketing Heads, Rate Heads and all Comptrollers dated September 21, 1972 (GL72-09-118) establishing Bell System guidelines for handling competitive bidding situations and formal requests for proposals. Attachment A3.

4. Letter to Company Marketing Heads with copies to General Plant Manag-

ers and General Commercial Managers dated November 20, 1973 (GL73-11-698) containing additional guidelines for competitive selling and a recommended procedure for serving customers who have contracted for non-Bell provided equipment. Attachment A4.

Attachment A1

AMERICAN TELEPHONE & TELEGRAPH Co.,
New York, N.Y., May 13, 1969.

To: Company marketing heads.

From: Assistant vice president—Marketing and rate plans department.

Synopsis: Transmits copy of a paper prepared by our legal department regarding marketing in the new competitive climate.

You will be pleased with the attached paper that was prepared by our Legal Department and forwarded to your General Counsel. It provides an excellent framework for making management decisions about those things which we can or cannot do in competing with other suppliers. The material will be incorporated in Sales training.

Your Training Coordinators will receive a copy of the paper during their meeting in Atlanta this week.

Assistant Vice President.

Attachment.

To all general counsel:

The enclosed memorandum deals with sales practices in the new competitive climate. It was prepared at the request of the Marketing and Rate Plans Department, and will be sent to Marketing Training Coordinators of the Associated Companies.

JOHN F. PRESTON, JR.,
General Attorney.

MARKETING IN A NEW COMPETITIVE CLIMATE

The Tariffs:

- (1) Pre-Carterfone.
- (2) The New Tariffs.

The New Competition:

- (1) Terminal Equipment.
- (2) Communication Systems.

The Communications Consultant's Problem Restraints on Our Sales Practices:

- (1) The Sherman Act.
- (2) The Clayton Act.
- (3) The Federal Trade Commission Act.
- (4) The Robinson-Patman Act.

Four Areas of Concern:

- (1) Advertising.
- (2) Sales Leads.
- (3) Sales Contacts; Tie-In Sales; Disparagement.
 - (a) Tie-In Sales.
 - (b) Obtaining Information About Competitors.
 - (c) What Can We Say About Our Competitor's Product; Disparagement.
 - (d) What Can We Say About Our Product; Puffing.
- (4) Market Surveys.

Consequences of Anticompetitive Conduct.

Conclusion.

MARKETING IN A NEW COMPETITIVE CLIMATE

The Bell System now enters an era of increasing competition. It faces competition in providing terminal, or peripheral, or tangential, equipment that may be connected to the telephone system at the customer's premises; it also faces competition in providing point-to-point telephone services.

The new competition stems from recent changes in the interconnection provi-

sions of our tariffs. These changes have been a part of our continuing effort to adapt our service offerings to the changing needs of our customers. The Carterfone case highlighted and dramatized this effort.

THE TARIFFS

(1) *Pre-Carterfone*

How have we changed our tariffs? In the pre-Carterfone days, we had a general prohibition against the attachment of all customer-provided terminal devices and all customer-provided communication channels. There were exceptions. For example, we would connect with communication systems of right-of-way companies or of defense agencies on military reservations. We would allow customers to provide their own teletypewriters on private line channels, and we would allow the connection of customer-provided business machines which stored and forwarded information. In a pre-Carterfone extension of our service offerings, we agreed to provide private line channels to connect customer-provided PAXs on different premises where there was no connection of these systems to the exchange and toll network. Otherwise, our regulations were pretty tight, reflecting our concern for protecting the integrity of the telephone network.

(2) *The New Tariffs*

Our new tariffs allow the connection of almost anything to our exchange and toll network, provided the customer uses a telephone company network control unit (the ordinary telephone dial, switchhook and ringer) and a voice or data coupler to protect the network from harmful inputs. The customer's equipment must also comply with certain minimum criteria designed to prevent interference with services furnished to other customers.

Under the new tariffs, we will now provide channels to connect customer-provided PAXs on different premises, or a customer-provided PAX on one end and a Bell System PBX on the other end, and we will connect either system with the exchange and toll network. We will connect with the customer's communication channels and will even provide him entrance facilities or "end links" for his own backbone communication system.

THE NEW COMPETITION

The tariff changes have encouraged business equipment manufacturers to compete with us in two general areas: in providing terminal equipment and in providing interpremises communication systems.

(1) *Terminal Equipment*

Examples of terminal equipment which were formerly provided by the telephone company, but which may now be provided by the telephone company or its competitors, are Speakerphones and Data-Phone Modems. We can provide them as a part of the basic telephone service, or a customer can now attach his own Speakerphone or Data-Phone Modem through a coupler to the telephone network.

(2) *Communication Systems*

Examples of competition in providing communication systems are: customer-provided PAXs; the private microwave system which ARINC says it is now considering as an alternative to TELPAK; and the specialized common carrier microwave network proposed by Microwave Communications, Inc. (MCI).

The Commission heard oral argument in the *MCI* case on April 30, 1968 and although ten months have passed, the Commission has yet to make a decision. MCI did not put on a very persuasive case concerning its basic legal, financial, technical and other qualifications to be a radio licensee. We may expect that others, more qualified than MCI, will apply for point-to-point microwave licenses to provide communication services on a common carrier basis. And we may expect more companies to apply for their own private microwave systems because of the September 1968 increase in TELPAK rates and the prospect of future increases.

We have always faced competition in the point-to-point field from Western Union and limited classes of private microwave licensees, such as right-of-way companies. Now the competition will be greater.

THE COMMUNICATIONS CONSULTANT'S PROBLEM

As the level of competition rises, we will have to try harder to keep the business we have and to get the new business we need to maintain a healthy rate of growth. The question is how hard can we fight? What are the limitations on what we as salesmen can do or say?

Can we ask a customer the price quoted by a competing bidder? If Stromberg Carlson has quoted a price for a PAX system and we are also bidding on the job, can we ask the customer what price Stromberg has quoted, what special features Stromberg equipment has, and whether Stromberg has offered any special inducements to make the sale?

Can we use information which comes to us solely because of our special position as the only purveyor of switched interpremises communication service? Can we offer special incentives to customers to get their business, as the electric companies and gas companies are doing to persuade home builders to construct houses equipped for electric or gas heat rather than oil.

This talk is intended to answer some of these questions.

RESTRAINTS ON OUR SALES PRACTICES

What is it that restrains us from the "hard sell"? Why can't we use any device at our disposal to lay hold of as much business as we can get? First, there is our own good judgment that this is not the way we ought to run our business. Second, we know a predatory business policy would create an unfavorable public image. Third, a public service commission waits in the wings to limit the profitability of predatory efforts through economic controls over our rates; it also controls directly our ability to compete by its authority over our construction program. Finally, there are specific laws which restrain unfair methods of competition and other actions which tend substantially to lessen competition or to create a monopoly. It is these laws, the antitrust laws, and their application to our new competitive environment that I wish to discuss today.

(1) The Sherman Act

The first great law affecting competition is the Sherman Act. The Sherman Act was passed in 1890: it was motivated by the economic climate of the time, often referred to as the "Age of Dinosaurs." Most major industries were coming under the control of one or a few individuals, the "dinosaurs," who accumulated incredible fortunes and achieved total control over the market for their products. For example, the American Sugar Refining Company dominated 99% of the market for refined sugar. The Standard Oil Company controlled 84 companies and produced over three-quarters of all petroleum refined in the United States. The American Tobacco Company dominated 60 corporations and controlled over 95% of the market for tobacco products. There was a beef trust, a whiskey trust, a cast iron trust, and many more. These trusts sought to crush competition and achieve monopoly without shame or apology. They eliminated competition among themselves, fixed prices, sold below cost, bought out and closed down competing factories, manipulated transportation rates, all with the obvious purpose to destroy competition.

The Sherman Act was called an antitrust law because, in the early days, entrepreneurs achieved control of industries by vesting the ownership of controlled companies in a trustee or group of trustees. When the Supreme Court of Ohio held that the Standard Oil trust violated state law, the control of these economic empires was gradually transferred to holding companies. The Standard Oil Company of New Jersey was the holding company which succeeded to the interests of the Standard Oil trust of Ohio.

So far as we are concerned, the Sherman Act is by far the most important piece of antitrust legislation. Yet, it speaks only in generalities. It contains two major sections: Section 1 prohibits every contract, combination or conspiracy in restraint of trade, and Section 2 prohibits monopoly, and attempts or conspiracies to monopolize. Almost any restrictive trade practice could fall under these broad prohibitions.

The Sherman Act was not vigorously enforced during the first twenty years of its life. However, during the administration of Theodore Roosevelt, several major government actions were begun which culminated in the Standard Oil

and American Tobacco decisions in 1911, which dissolved the tobacco and oil trusts.

These cases shocked the business community. Businessmen saw that they were now going to have to take the antitrust laws seriously. They sought a more explicit statement of the rules of conduct they must abide by. The Clayton Act was only a partially successful response to their desire.

(2) *The Clayton Act*

The Clayton Act was passed in 1914. It prohibited specific business practices which had harmful anticompetitive effects, that is, which tended substantially to lessen competition or to create a monopoly in any line of commerce. Under the Clayton Act, it is not necessary to show that the prohibited acts have ripened into a restraint of trade or a monopoly, but only that they tend toward these results.

What were some of the things the Clayton Act prohibited? It prohibited price discrimination but it did so ineffectually. It also prohibited some specific sales practices. For example, it prohibited exclusive dealing arrangements where a manufacturer requires a retailer to deal in his product exclusively or requires a retailer not to handle competitive products. It covered requirements contracts, where a buyer agrees to purchase all or a percentage of his requirements of a product from a particular seller. It prohibited tie-in sales where a seller requires a buyer to purchase some product in addition to the product he is primarily interested in. Finally, it prohibited mergers through stock acquisition which tended to lessen competition.

We have not regarded the Clayton Act as applicable to our services, since it applies to the sale or lease of "commodities" and communications services are not commodities. On the other hand, our competitors do purvey commodities and must comply with Clayton. Although the cases seem to justify the view that Clayton does not apply to communication services, courts can change their minds and laws can be changed. Any conduct on our part which blatantly offended the spirit of the Clayton Act would certainly encourage such a change.

(3) *The Federal Trade Commission Act*

The Federal Trade Commission Act was also adopted in 1914, three weeks before the Clayton Act; it was substantially amended in 1938. The Federal Trade Commission Act prohibited unfair methods of competition. At common law, a body of case law had developed which provided judicial remedies for unfair competition. Unfair competition dealt with such questions as trying to pass off your goods as those of a competitor, stealing a trade secret, inducing breaches of contract, and trying to destroy a competitor's business. The Federal Trade Commission Act broadened the concept of unfair competition to include unfair methods of competition. The 1938 Wheeler-Lea amendment extended the Act to cover unfair or deceptive trade practices.

The Federal Trade Commission enforces the Federal Trade Commission Act except as against common carriers. Accordingly, the FTC has no jurisdiction over telephone companies; it does, however, have jurisdiction over Western Electric.

As with the Sherman Act, a number of years passed before the full impact of the Clayton and Federal Trade Commission Acts was felt. During the early years, the FTC met with some success in deceptive advertising cases but the Supreme Court held against it in tie-in, exclusive dealing, refusal to deal and Section 7 (merger) cases.

During the great depression, the worm turned. In the early 1930s, the FTC conducted a major investigation of chain stores. The investigation showed that large-scale buyers were able to obtain special price concessions from their suppliers which gave them unfair advantages over their smaller competitors. The chain store investigation is credited with bringing about the Robinson-Patman Act.

(4) *The Robinson-Patman Act*

The Robinson-Patman Act was adopted in 1936; it was intended to strengthen Section 2 of the Clayton Act which deals with price discrimination.

Robinson-Patman prohibits price discriminations not based on differences in cost. It prohibits devices whereby price discrimination can be effected indirectly, as through payment of commissions to a purchaser, or payment of ad-

vertising or promotional allowances, or providing services to a customer, unless these privileges are available to other customers on proportionately equal terms.

Concessions to customers may also be violations of the Sherman Act. For example, in the new IBM antitrust suit, the government claims that IBM used research grants to educational institutions and buy-back of computer time as special concessions which unreasonably restricted the growth of competitors.

Section 2(f) of the Robinson-Patman Act prohibits purchasers from inducing price discrimination. Accordingly, while telephone companies are not directly concerned with Robinson-Patman with respect to the services they sell (since they are not commodities), they are subject to Robinson-Patman with respect to the products they buy.

FOUR AREAS OF CONCERN

How do these statutes affect the communications consultant? Let us look at how they might apply to each step in the development of a sale: (1) the creation of a market demand through advertising, (2) the use of information from customers or other sources to develop sales leads or sales tips, (3) the contact with the customer, how we try to sell our product to him and the dangers of sales techniques using tie-in sales or competitor disparagement, and (4) a study of the reasons why we won or lost a sale through market surveys.

(1) *Advertising*

First, let's look at the creation of a market demand through advertising. I shall mention this only briefly because the communications consultant is not directly concerned with advertising. Our public relations people plan the advertising, it creates customer interest, we must work with it and be prepared to respond to the market pressures it creates.

Of course, the touchstone of our advertising policy must be the honest and candid disclosure of our product and its capabilities. In this way we comply with the letter and spirit of Section 5 of the Federal Trade Commission Act which prohibits deceptive or unfair acts or practices.

Even with the best intentions, it is easy to do things which others will say are misleading. Recently, we conducted a test on operators' headsets and announced that a particular headset of Bell System manufacture was "most preferred." But the manufacturer of a competing headset said that we did not include his headset in the trial and it was deceptive to describe our headset as most preferred when a logical alternative was not included in the comparison.

In recent years, the lawyer's interest in advertising has focused on the possibility that massive advertising may act as a limitation on market entry. What do I mean by this? In 1957, Procter and Gamble was the nation's largest advertiser, with a budget of \$127 million for advertising and sales promotion. Procter acquired Clorox, the leading manufacturer of liquid bleaches. The Federal Trade Commission required Procter to divest itself of Clorox, partly because Procter might devote its massive advertising resources to suppress a short-term threat from any newcomer to the liquid bleach market. A new entrant would be much more reluctant to face the giant Procter than the smaller Clorox. Where a company or an industry engages in tremendous advertising, it is a widely published warning that it possesses and knows how to use a powerful offensive and defensive weapon against new competition. New competition dare not enter the field unless it is supported by comparable advertising.

Does this case have any application to us? The telephone company provides one-way radio paging service which we call Bellboy. Miscellaneous common carriers do the same. The telephone company sends bills to its millions of customers every month. Suppose it includes a bill insert advertising Bellboy. Several miscellaneous common carriers have said that this would be unfair competition.

One way of selling your product is through telephone solicitation. This can be very expensive. The telephone company pays no telephone bill; our competitors do. A miscellaneous common carrier has claimed that, if we try to sell Bellboy through telephone solicitation, it would be unfair competition.

The FCC Common Carrier Bureau has expressed concern about advertising for Bellboy. We have advised the companies not to use bill inserts, and not to use our control or access to the telephone network in any way to obtain competitive advantages in selling Bellboy.

Not all our competitors are small miscellaneous common carriers. ITT, Automatic Electric and Stromberg Carlson sell large assemblies to a relatively small class of customers. They maintain intensive and effective advertising efforts in trade publications and through direct solicitation of customers. The use of bill inserts to sell PBXs would be wasteful and unproductive. Similarly, we would have little desire to sell PBXs by massive telephone solicitation.

The use of bill inserts and telephone solicitation may be decisive in the competitive battle with miscellaneous common carriers, but it may be unimportant in competition with industrial giants. There is no absolute rule in this area. We must be aware that our capacity to mount a massive advertising effort may be destructive of competition in some contexts.

(2) Sales Leads

Another area where we must be aware of antitrust considerations is what I will call "sales leads" or "sales tips." Suppose Jordan Marsh of Boston has a communications manager who calls you up and says "What kind of a connecting arrangement do I need for a 100-line PAX at a suburban store?" You tell him and then ponder what this is all about.

You realize that Jordan Marsh must be building a new store and that a competitor is out there trying to sell him a PAX. You call in your department store specialist and tell him to get over to Jordan Marsh fast and find out what is happening. He tries to keep the customer from pulling out a Bell PBX or to get him to buy a PBX if he doesn't have one already. Let us say you are successful. Does your competitor have any complaint?

What might he complain about? First and most obvious, you took a sale away from him, you hurt him. But is not this what competition is all about. Every sale we make is a sale lost by ITT; every ITT sale is a sale lost by Bell. Every lost sale hurts the competitor. This is the way of life in competition. If we have a better product, better service, or better salesmen, we get the sale. If we don't, we are hurt but we are motivated to try and improve our product or to produce it at a lower price so that we can get the business next time. Economists who regard competition as a desirable economic relationship say that this motivation produces better products at lower cost to the consumer. And this is the most basic purpose of our antitrust laws.

What is ITT's next argument? Virtually all PAX systems must connect to Bell System lines. Bell has a monopoly over switched interpremises communications service so that ITT must always reveal sales leads to Bell but Bell never has to reveal sales leads to ITT. ITT says that is unfair. ITT will never be able to compete in this environment.

If you carry ITT's argument to its logical conclusion, it would exclude Bell from the competitive arena entirely, since Bell will always have this advantage; it has and will continue to have exclusive control over the switched interpremises communications network. Moreover, a competitor could call Bell as soon as it decided to work on a sales prospect and then claim that Bell was taking advantage of confidential information. If Bell is precluded from bidding, this would decrease competition not increase it.

There is no doubt that a list of sales prospects can be something of commercial value. It can be the subject of a trade secret. A trade secret is not a new invention that might be patented, or an unusual or artistic combination of words that might be copyrighted. In fact, a trade secret may be knowledge which is well within the competence of anyone to develop. However, someone has gone to a lot of effort to collect facts or ideas into a useful form, and the law says he should be able to enjoy the fruits of that effort to the exclusion of others who have made no such effort. So a list of customers may be a trade secret and it may be unfair competition to steal it or obtain it through a breach of trust or confidence.

Don't we know that Jordan Marsh is a sales prospect even before it calls us? If the customer calls us and tells us he is considering a PAX, is he telling us anything we don't know? Maybe he is. There are some 128,000 PBX installations around the country. How do we know which of our customers is considering terminating a service or installing a new one? If someone could tell us where Bell sales are jeopardized, we could concentrate our efforts where they would be most productive. A list of sales prospects or a list of potential terminations could be very valuable to us; it could have real commercial value.

If we hired an industrial spy to go and find out where ITT is making bids, this would be unfair competition. If we bribed an ITT employee to get the information, it would be unfair competition. If an ITT distributor in Boston hoping to get some Western Electric business tells us that ITT is bidding on the Jordan Marsh job, there might be a breach of a confidential relationship and a basis for a claim of unfair competition. Or, if a retired Bell System employee with his own consulting firm has learned of the Jordan Marsh job in the course of his work and passes the information on to us as a friendly tip, there may also be a breach of confidence and possible unfair competition.

But suppose the customer tells us. By the very fact that he is making a bid for a job or collating information to make a bid, a seller may reveal to the customer or a competitor his desire to sell or his expectancy of a sale. The identity of a sales prospect may be a trade secret, but a trade secret voluntarily spoken is lost forever. It belongs to everybody. In the words of Justice Brandeis, the general rule of law is that knowledge, after voluntary communication to others, becomes as free as the air to common use. By disclosing information voluntarily to someone who is not in a position of confidence and trust, our competitor places his information in the public domain.

The customer has no obligation to conceal the fact that he is interested, or might become interested, in a communications job, or that he has in fact received bids. He is free to reveal these facts to us or anyone else. There is nothing wrong in using information so received, or surmised, to alert our people to a potential sales lead.

We must use discretion. If the customer or the competitor comes to us because we are a necessary partner in all communications transactions, because as a competitor he could not formulate a bid or as a customer he could not evaluate a bid unless he receives certain information from us, then it would be a good business practice not to use this information to our competitor's detriment.

For this reason, we have made a special effort to separate the functions of rate quotation and sales. As you know, we have set up special numbers throughout the country which people can call to obtain rate quotations. A customer or competitor may call this number and inadvertently and unwillingly reveal the identity of a sales prospect. We do not want our sales people to use this kind of information to identify sales leads and so we have arranged for rate quotations to be given from sources outside the sales department.

Suppose we get our sales lead from an outside communications consultant. A true communications consultant is merely the agent for the customer and it is as if we were talking to the customer.

In recent months, communications consultants have presented a unique problem. Many are retired Bell System employees. They think the Bell System can do the job better and cheaper than anyone else. Consciously or unconsciously, they may formulate customer requirements in such a way as to preclude real competition with our services. Or, they may give us inside information on the customer's requirements. While we have no control over outside consultants, we should be mindful of the problem they present.

In addition to customer contacts, we can use any other information which comes to our attention as sales leads. We can peruse applications for building permits, trade publications, newspaper announcements, we can attend industrial fairs, we can maintain contacts with architects and the building industry, and we can use any source of information a resourceful mind can think of.

A final thought on sales leads. We may find out about ITT's efforts to sell Jordan Marsh early or late in the game. ITT may be merely assembling information; it may not have yet made any formal proposal to the customer. Or, it may have made a bid, or be negotiating on the terms of a contract. Or, it may have made the sale, and signed a contract under which it agrees to sell and Jordan Marsh agrees to buy.

At any stage up to the execution of the contract, you are free to make your sales effort within the guidelines we have discussed. But once Jordan Marsh has signed on the dotted line, you should make no further effort which could in any way be regarded as encouraging Jordan Marsh to cancel or breach its contract with ITT. This is interference with contractual relations and unfair competition.

Of course, Jordan Marsh may have signed up with ITT for a limited time. When ITT's contract has expired, Jordan Marsh is again fair game for our communications consultant.

(3) Sales Contacts; Tie-In Sales; Disparagement

Let us say that advertising has been successful in creating a market demand. We have successfully identified the sales prospect. Now we approach the customer contact. Are there any limitations on the package we can sell him, what we can say about our product, or what we can say about our competitor's product? The antitrust laws address themselves to a number of sales practices in this area.

(a) Tie-In Sales

First, let us talk about tie-in sales. Suppose the United Shoe Machinery Company produces 95% of the shoe machinery in the country. If you want to manufacture shoes, you must for all practical purposes use their machinery. United Shoe says that it will not lease a machine to you unless you also buy from them all materials and supplies used on the machine. This precludes United Shoe's competitors from selling materials and supplies to you. This violates Section 3 of the Clayton Act.

Or suppose IBM leases business machines to you only on condition that you buy your tabulating cards from IBM. This restrains competition in the tabulating card field and violates Clayton 3.

Or suppose an oil company leases a gas station to a gas station operator and tells him it will terminate the lease unless he buys his requirements of batteries and tires from someone the oil company designates and from whom it, incidentally, gets sales commissions.

In the shoe machinery case, the shoe manufacturer had 95% of the market for shoe machines. He dominated this market and he was using his market power in this area to establish a monopoly in another area.

In the IBM case, IBM had patents which gave it monopoly powers in the business machine area. It used this monopoly power to establish an unlawful monopoly in the tabulating card area.

In the gas station case, the oil company had a right to build a gas station and to lease it to someone to operate. But it could not use its dominance over the gas station operator to limit competition in other areas such as tires and batteries.

How do these types of case apply to us? Suppose we told a customer that we would not give him telephone service unless he ordered his Speakerphone requirements from us. Since the customer must come to us for telephone service, he would have no choice but to take our Speakerphones or do without telephone service.

Of course, we would never do such a thing knowingly, but it is not difficult to drift into this kind of trade practice unwittingly. Suppose we were to suggest that we could meet a customer's service date if he ordered his complete communication system from us, including all PBXs. However, because of Western Electric shipping practices, or priorities, or some other vague reason, we told the customer we could not meet his service date if he ordered a part of his communication system, the PBXs, from another supplier. Or, suppose we say nothing but over a period of time it develops that we in fact meet our service dates when PBXs are ordered but are always late when the customer orders PAXs from a competing manufacturer.

The manufacturer might discern a pattern of discrimination from a course of conduct. He would argue that we do a good job of providing our basic services when the customer is a good guy and orders PBXs from us, but we do a poor job when the customer orders PAXs from others. Could this lead to private antitrust litigation? I think it could.

What is the lesson in this illustration? Give the customer your best service whether he orders Bell or from an outside supplier. Be virtuous and appear virtuous. Do not suggest that he will get anything less than your best efforts whatever his buying posture. Make sure you keep after your supplier to see that he delivers on time.

How else may we tie in sales of message and peripheral services? Suppose we quote a price for the total service, including message service and peripheral equipment. In the new IBM case, the Justice Department said that IBM's practice of quoting a single price for hardware (a market which they domi-

nate), software and supporting services tended to restrain trade. IBM has the requisite market power on hardware with some 75% of the market for business equipment.

Should we separately quote our prices? In my opinion, we are perfectly free to quote a package rate if this serves the convenience of our customers. All our prices are on file with the Public Service Commission; they are matters of public record. There can be no claim that we are engaged in package pricing of the kind referred to in the IBM Complaint as each separate component of our charge may be determined from public records. Of course, if our customer wants us to state the charges separately, we should, as a matter of good customer relations, be prepared to do so.

(b) Obtaining Information About Competitors

Our competitors know all our prices but we may not know theirs. How far can we go in finding out what our competitors are charging?

First, we know many of the prices our competitors charge. Under the License Contract, AT&T continuously maintains price comparisons of the published prices of Western Electric and competing manufacturers. Of course, this information is available to the Marketing Department.

What can we ask our customer about our competitor's product? Can we ask the price, any special equipment features, the delivery schedule? My answer to this is generally, yes. Just a few weeks ago, several judges of the Supreme Court in the *Container Corporation* case made it rather clear that you can obtain price and other information about the competitor's product from the customer. Once a competitor quotes a price, it is in the public domain and he has no special rights to keep it confidential.

There is some law that a competitor can keep his costs confidential or his manner of developing his price schedule. If he publishes this in such a way as to place it in the public domain, we would have every right to use it but if he tries to keep it confidential he is entitled to protection.

So we may ask our customers about our competitor's prices, but we should be careful asking about price formulas.

Finally, suppose Stromberg calls up and tells us "Here are our prices we want you to know them." This could create problems because the exchange of price information among competitors may be a device to fix prices, if not by express agreement, by informal understanding.

What about the competitor's product? Can we ask about the service details? Once the competitor places his product in the market, we are entitled to know all about it. We could even buy a Stromberg PAX, take it apart, and find out everything it can do. Or, we can ask customers or anyone who has had experience with it for the same information. We have a right to know everything our competitor's product can do.

(c) What Can We Say About Our Competitor's Product; Disparagement

What can we say about our competitor's product? Can we tell the customer about how bad the competitor's product is and how good our product is? Let us talk a little bit about disparagement.

We can describe the features of our competitor's product and our product. We can point out the particular features which are included in the Bell product, but not included in the competitor's product. We can point out that extra features provided by the non-Bell product add to its cost.

We should assume that the competitor's product can do what he says it can. If you know a customer is under a misapprehension as to the features of competitor's equipment, you can correct him if you are sure. For example, if you know that a competitor's PAX has only a 40-line output and the customer thinks it has a 60-line output, you can correct him. As a general rule, this is about as far as you should ever go.

We should not say that our competitor's equipment will not work or is defective. We should not suggest that the extra features it has are not useful or appropriate.

We should not comment on our competitor's product except on some basis that is relevant to the present merits of his product. For example, it would not be relevant to criticize the competitor's product because it was made in Japan or because the company that made it was headed by a former German scientist.

You cannot use half-truths. You may not be able to say that the FTC has

found your competitor guilty of unfair trade practices, even if it is true; it may also be true that the competitor has long since ceased and desisted from these practices. The customer does not weigh every word you say. Your words may be true, but they may be framed in such a way as to mislead and deceive. If so, you are engaging in deceptive practices.

Let me pause to mention a special problem. In some areas, you will be expected to sell non-Bell items which we offer under tariff in competition with Bell items. Such items include the Plantronics lightweight headset and repertory dialers. In fairness, we must ask ourselves, are we giving as much publicity to the non-Bell item as we are to the competing Bell items? Are we maintaining adequate stocks of the non-Bell item so that we can assure delivery as promptly as with Bell items? Do we use proper pricing formulas in pricing non-Bell items so that customers will not be discouraged from buying the non-Bell device in favor of the Bell device? Once we have decided to offer a non-Bell item under our tariffs, we must diligently see that it has access to the market equal to that for Bell items.

(d) What Can We Say About Our Product: Puffing

What can we say about our product? Of course, we cannot lie about it. What about true statements?

"Our cigarette is lowest in tar and nicotine, as shown in the Reader's Digest test." "Our insecticide kills twice as fast." "Our aspirin goes to work faster than the other three leading pain-relief tablets."

All of these statements are true, but the difference in the tar and nicotine level of the lowest brand and the other brands was not significant. Our insecticide kills faster, but no human being could detect the difference, and the same is true of our aspirin. The Federal Trade Commission thinks this kind of puffing is deceptive, even if it is true.

The best rule is to press as truthfully as we know how the merits of our own equipment. We can say all we want about how good Bell service is, but we can't lie about it or praise our services in such an unwarranted fashion as to be deceptive. Moreover, our objective is to make "lasting sales." If our sales effort has misled the customer, there is no lasting sale. A dissatisfied customer can cancel service at any time, and this often means a considerable loss to us.

We must also avoid announcing future production of new equipment when we know it is unlikely that we will be able to implement production within the announced time. A customer may be discouraged from buying a competitor's product if he thinks you have something better coming along in the near future. In the new IBM Complaint, the government says that IBM should not announce the development or production of new equipment until the product has been subjected to normal testing.

(4) Market Surveys

The last step of the salesman's job is, after the sale has been won or lost, to find out why. One way we may do this is through a market survey. And, of course, the market survey may be the source of information which we will use to restructure our tariffs or design new equipment which we will advertise to create market demand, and so start the entire cycle of sales activity again.

As competition becomes a rising force in the communications industry we will want to get all the information we can about what service features our customers want, what they are willing to pay for communications equipment, what are the advantages of our competitor's equipment, and what special appeals their equipment may have.

We are currently considering two kinds of market surveys. First, we may ask our communications consultants "What did the customer buy, how much did he pay, why did he select non-Bell over Bell?" Here we are merely asking an employee for his opinion. There is nothing wrong with it. You have the right to use your consultant's knowledge and expertise and professional opinions. This is what you are paying him for.

A second kind of survey is where you go out and ask the customer "What equipment did you buy, what price did you pay for it, why did you buy this equipment instead of Bell equipment?" Here you have a public relations problem, you must approach your customer tactfully, but there is nothing wrong in asking him these questions.

The customer can answer your questions or not as he chooses. Neither the

successful nor the unsuccessful bidders can claim that this is unfair competition. They have disclosed their bids, their prices and the conditions of their bids to the customer who has no confidential relationship to them. They have placed this information in the public domain and it can no longer be regarded as a trade secret.

CONSEQUENCES OF ANTICOMPETITIVE CONDUCT

The Government's Complaint in the 1949 Government antitrust suit sought divestiture of the Western Electric Company. The Government thought there could be no effective competition in the manufacture and sale of telecommunications products so long as there was vertical integration in the telephone industry, that is, where AT&T controlled Western Electric which manufactured telephone apparatus and the telephone companies which bought it.

We argued that vertical integration afforded many advantages in the telephone industry in terms of lower manufacturing costs, lower prices to telephone companies, and lower rates to consumers. Moreover, the FCC had a certain amount of control over Western Electric prices and the effect that such prices had on common carrier rates, which it would not have were Western divorced from the Bell System. On the basis of these arguments, we reached agreement with the Department of Justice on a consent decree which avoided divestiture. The consent decree is usually called the Final Judgment.

Some people feel that the Final Judgment resolved for all time the questions raised by the Government's Complaint, and that we are henceforth immune from antitrust attack. This is not so. Donald Turner, a recent Chief of the Antitrust Division of the Department of Justice, has expressed sympathy with the view that a consent decree may be reopened if the decree has not accomplished its objectives. Also, the Department might start a new suit on the basis of post-decree conduct, or on some new theory of responsibility.

Recently, the Department of Justice has participated in a number of FCC proceedings which are of direct concern to the Bell System. These include the Computer Investigation, Carterfone, and the post-Carterfone tariff filings. In all of these cases, the Department's objective has been, as in the 1949 Complaint, to achieve a climate more congenial to competition in the sale of communications equipment. If their efforts are unproductive, we may anticipate that they will return to more conventional methods to achieve the objective of greater competition.

CONCLUSION

I have tried to describe to you the areas where competitive sales practices may offend the spirit and the letter of the antitrust laws. I have described the history of antitrust legislation, to show that each law was a legitimate response to social pressures at the time it was adopted. We should respect the antitrust laws; we should not try to find loopholes in them. They are the rules of the game and we must compete within these rules.

It goes without saying that if our practices conform with the letter and the spirit of these laws, we will not be embarrassed by what our files say and our files will reject our purpose and intent to achieve compliance.

We face difficult and unaccustomed decisions in the new competitive climate. Principal among these will be the pricing of our services, our methods of cost allocation, whether competition will justify departure from a nationwide or statewide schedule of rates. However, these are decisions which will be made by our rate planners in conjunction with accountants, engineers and lawyers. These problems will be solved, for better or for worse, and the solutions reflected in the tariffs. It will be your job to sell what the tariff offers.

You may contribute to this effort, you can help our rate planners know whether the rate patterns they adopt place us at a serious competitive disadvantage. You can let them know when you lose sales or are likely to lose sales because of an unfortunate rate structure, whether tariff restrictions are necessary and whether they unreasonably restrict the use of customer-provided devices.

In maintaining a correct antitrust posture, we must always reflect upon the consequences of our behavior on our customers and manufacturers and purveyors of competitive equipment. The theory of our economic system is that, except for narrowly circumscribed areas of natural monopoly, free competition promotes the best products and services available to the most people at the

lowest prices. You may wish to argue with this theory but it is written into the fabric of our statutes and 80 years of case law. It is no longer debatable. In this system the best way to improve sales and to maintain a healthy competitive posture is by having the best product and providing top quality service. There is no substitute. A monopoly achieved through excellence may still be vulnerable. But of all the cases a lawyer would like to defend, this is the best.

ATTACHMENT A2

JUNE 25, 1971.

Subject: Guidelines for Negotiating With Independent Consultants and Customers in Competitive Sales Situations.

File No. : 71-06-246.

To: Marketing heads, competition coordinators.

From: Assistant vice president.

Synopsis: Guidelines for establishing the authority of private communications consultants to act for customers, dealing with customers who have engaged private consultants, and providing information to customers and consultants regarding customer services.

* * * * *

Private communications consultants have increased their activities to the point that it seems desirable to establish guidelines for negotiating with those who represent customers. Many of these consultants may also represent other suppliers of telecommunications equipment.

The following guidelines review three areas:

Establishing the authority of an independent consultant.

Dealing with customers who have retained independent consultants.

Providing information to customers or authorized consultants.

ESTABLISHING AUTHORITY OF AN INDEPENDENT CONSULTANT

A customer may choose to retain an independent consultant for the purpose of analyzing his communications needs and requirements. If the customer seeks our advice as to whether he should retain an independent consultant, we should neither encourage nor discourage him from doing so but rather should state that it is a matter for him to decide. We may also inform the customer that, without any specific charge or obligation, the Telephone Company provides a consulting service for its customers.

While several different methods are possible for establishing the authority of independent consultants, it is advisable to request a letter signed by the customer which indicates as specifically as possible the scope of the authority given, the time period for which the authority is given, and the locations included. If the letter of authority is unclear, we should ask the customer to define the scope of the authorization. We may also ask the customer if the authorization is intended to preclude or limit future contacts with the Telephone Company.

DEALING WITH CUSTOMERS WHO HAVE RETAINED COMMUNICATION CONSULTANTS

If a customer has employed or is actively negotiating with an independent consultant, it should not interfere with our normal business relationships with the customer. Unless specifically denied by the customer it would not preclude routine calls or visits to the customer by Marketing and other departments as part of a program of scheduled visits.

If an authorized consultant's recommendations appear not to be in the customer's best interests with respect to his service requirements or business operations, we should attempt to review his recommendations with the consultant or jointly with the consultant and customer. If we feel that the consultant has obstructed necessary communications between our customer and ourselves, we are free to contact the customer on notice to the consultant. Other services not specifically assigned by the customer for consultant negotiation continue to be our responsibility. Similarly, other telephone company programs may be offered by the customer. For example, PHONE-POWER, and Traffic Service Adviser programs may continue. Judgment should be used and our efforts should be documented in the customer information file.

PROVIDING INFORMATION TO CUSTOMERS AND AUTHORIZED CONSULTANTS

Providing information to outside communications consultants involves balancing a number of different considerations.

1. We should provide information to the private consultant on the same basis as we would provide information to the customer.

2. We should provide no more and no less information to the customer merely because he is represented by a consultant.

3. We are not obligated to do the consultant's work for him nor should we assume the burden of developing a substantial portion of the study data which is a part of his work product.

4. We are not obligated to provide company-proprietary information to the customer or his consultant.

5. In general, we will make data available to the customer or consultant in accordance with the principles set forth above. If we incur additional costs in providing such information those costs should be passed on to the customer.

Let us look at these points in more detail.

First, we will supply information to the outside consultant on the same basis that we provide information to the customer. Often we offer to make studies of customer services looking toward the recommendation of new services or to support retention of an existing service. We should perform similar studies at the request of an authorized consultant. In other words, customers may expect full cooperation whether they are represented by a consultant or not.

In determining whether we will perform a study for the customer or consultant, we should avoid making studies where we have recently completed a similar study for the customer.

Second, we should supply no more information to a customer merely because he is represented by a communications consultant. Frequently, consultants request elaborate studies such as traffic studies and toll analyses which produce large amounts of data. Normally, unless justified by a service consideration, we would not make these efforts on behalf of the customers and we should not do so merely because the customer has engaged a consultant. The touchtone of our policy should be the fair and equal treatment of all customers.

Third, the consultant may request studies and analyses to support his ultimate recommendation. This material constitutes a substantial portion of the consultant's total work product. We are under no obligation to perform studies and analyses for this purpose. We should not perform work which adds to our costs of doing business without being justified, in our judgment, by customer or service reasons.

Fourth, we are under no obligation to provide company-proprietary information to a customer or consultant. This information is developed by the Telephone Company at some expense and has value to the Telephone Company. It includes equipment work sheets, traffic study data, traffic observations, service orders, and similar outputs of our order, billing and record-keeping systems. Such information is normally not provided for customer use. Proprietary information also includes our study methodology and the basic data used to formulate recommendations.

If a consultant should request information about a previous Telephone Company study of the customer's service, we may supply him with study results (interpreted data); we should not supply the underlying raw data upon which our own analyses and recommendations are based. Recommendations rely on proprietary methodology and a proprietary evaluation and interpretation of raw data. Moreover, under the conditions outlined below, the customer has full access to any data he needs to determine usage or inventory.

A few examples of the type of data requested are equipment inventories, key sheets, toll message detail and WATS Study data other than what is provided customers as the normal support for their bill.

In most instances, the customer has full information on toll call usage from his portion of the toll record. If he requests billing information on tapes or in other machine-readable form, we will supply these records at cost.

WATS service does not contemplate the provision of usage data other than that necessary to substantiate billing. Moreover, the customer may monitor attendant-accessed WATS usage at his switchboard or by interrogating his own employees. Where Telephone Company detail is required the costs incurred

should be passed on to the customer as outlined in General Letter 71-05-129 dated May 19, 1971.

Some consultants claim billing discrepancies and request a physical check as an equipment inventory. In such a case, we should conduct a physical check or inventory and advise the customer or his agent of the changes in billing as is customary.

Normally, we use key sheets and wiring diagrams as guides for Plant craftsmen. These records are subject to inaccuracy because of subsequent order activity and field changes which have not yet been reflected on the file copy. Because of potential inaccuracy, we would not normally supply copies of these records to our customers.

Fifth, there may be occasions when the customer feels he needs data which are available only through the telephone company, or available through the telephone company at considerably less cost than if developed from his own sources. Examples of such data are given in the following paragraphs. Normally, this type of data requirement will be rare. In general, we should give the customer and his consultant our full cooperation in developing the data they desire, but we should not undertake to gather the data for them.

Busy studies, determining the number of busy signals experienced on the customer's lines, are one example of this type. Normally, we must obtain this information at the central office. In most cases, we should supply such a study at no extra cost to the customer, since the study may lead to a recommendation that the customer order more lines. However, if we have recently completed such a study and made the results available to the customer we should impose a charge based on the related costs for any additional study requested by the customer.

A principal category of data desired by customers is traffic data. For example, data developed from stroke counts and registers on the face of the switchboard is available to the consultant as readily as to the Telephone Company. In these circumstances, we should expect the customer to obtain the data desired from these sources. However, where we provide special registers or provide registers at the switchboard location to facilitate customer, or consultant, studies we should charge the subscriber our full cost for the service facilities provided. In any event, the customer or private consultant would be responsible for reading, collating and interpreting the data.

In other cases, the data are available only through registers, etc. in the switchroom. While the customer normally has access to the switchroom, for safety reasons and for the protection of our equipment, we do not encourage him to enter the switchroom. Further, direct connections of customer-supplied registers to our equipment should not be permitted. Where such data is required, you should consider providing registers at a remote location (the attendant position, for example) accessible to customer or consultant personnel. The customer would be charged for the cost associated with providing the registers and associated wiring.

While we wish to comply with information requests to the maximum feasible extent, we must also keep in mind that the consultant's request may impose significant costs on us. These costs are incurred for the benefit of a specific customer. Accordingly, that customer should pay the costs of special studies made at his consultant's request and they should not be passed on to the general ratepayer. Performing studies and collecting data not only involves substantial expense, it diverts our limited manpower and resources from their assigned tasks. Consequently, we should resist supplying information or making studies which we deem unnecessary, excessive or of an unusual nature. We should be satisfied that the information requested is indeed germane to a study of this customer's communications requirements.

We should also resist supplying additional copies or duplicating information which has already been provided to the customer such as billing statements and itemizations, contracts, register readings, past recommendations, etc.

We should not accord a consultant-represented customer study request preferential treatment over studies being performed for other customers. Often, the equipment we use to perform studies is in limited supply and use is scheduled well in advance. One example would be traffic usage recorders. We should not divert such equipment from previously scheduled studies just to comply with a customer or consultant request. Finally, when we make a study, we should use

standard Telephone Company formats and procedures and not special methodology dictated by the consultant.

If you or your people have questions or comments, Jack Shields (212-393-4416) is familiar with this matter.

ASSISTANT VICE PRESIDENT

Attachment A3

American Telephone & Telegraph Co.,
New York, N. Y., September 21, 1972

Subject: Requests for Proposals

To: Engineering Staff Heads, Operating Vice Presidents, Company Marketing Heads, Rate Heads, and All Comptrollers

From: Assistant Vice President—Engineering Switching; Assistant Vice President—Business Market Servicing, Assistant Vice President—Operations Commercial, Assistant Vice President—Operations; Plant, Assistant Vice President—Operations Traffic, Assistant Vice President—Market and Service Plans, and Assistant Comptroller.

Synopsis: Establishes Bell System guidelines for handling competitive bidding situations and formal Requests for Proposals (RFP's).

More and more business customers are using formal bidding procedures to select a communications supplier for their telephone service. The customer issues a formal request for proposal (RFP) with specifications as to the nature of the facilities desired, installation intervals, maintenance and other bidding conditions. This practice has become quite common among Federal and State government agencies, Educational Institutions and the Hotel/Motel Industry.

While some associated companies have attempted to properly satisfy all bid requirements, most feel they cannot meet the requirements because of existing policy and practice. However, unless we respond to these RFP's, we may exclude ourselves from some important markets which we have no intention of abandoning voluntarily.

Most RFP's give the customer the right to reject any or all proposals or to accept different proposals. Consequently, we are normally not foreclosed from making bids even though we cannot comply precisely with the specifications. Usually, we can submit bids for the system the customer proposes and we can also submit bids for the system we would recommend.

Difficulties arise when the RFP asks us to make commitments outside of our tariffs. We can make contractual commitments which are implicit in our tariffs. If the customer wants special commitments which go beyond our customary responsibilities to customers, we should consider supplying those services and charging for them at special tariff rates or on a special assembly basis. We can supply information which is not a contractual commitment, e.g., information as to the size, training and location of our repair forces.

In the following attachment, we have provided replies to the many common questions which have been directed to us regarding bidding procedures. It is intended that this will clarify that our future position should be, and provide the direction desired in handling bidding situations.

C. R. Williamson, Assistant Vice President Joe H. Hunt, Assistant Vice President; D. M. Barrett, Assistant Vice President; P. D. Loser, Assistant Vice President; F. A. Robinson, Jr., Assistant Vice President; R. T. Dugan, Assistant Vice President; W. W. Brown, Assistant Comptroller.

GUIDELINES REQUEST FOR PROPOSAL RESPONSES

Q. Will we respond to Request for Proposals (RFP's) using format determined by the customer, posting the bid bonds, supplying the correct number of copies, filling out the forms and submitting the bid on time? Or will we take the position that our rates are included in filed tariffs and are a matter of public record?

A. We can respond to RFP's and should attempt to do so complying with the stipulations set forth in the RFP. A review of actual cases indicated quite convincingly that we were more successful in winning the contract when our response confirmed with the RFP.

Q. Will we pay for copies of the RFP?

(Note). In some cases the prospective bidder had to pay for copies of the specifications before he could bid. The cost ranged from \$50 to \$100 per set.

A. Yes, we will pay for copies of the RFT.

Q. To what account will the salesman charge this expense?

A. The expense should be charged to departmental expense. In some cases you may choose to recover bid costs by appropriate customer billing.

Q. Should bid bonds and completion bonds be provided?

A. Yes, we may provide both bid bonds and completion bonds as long as it is done in compliance with State laws where appropriate. However, we should not overlook the possibility of avoiding bonds. Bid bonds and performance bonds are intended to protect the customer against contractors who are unwilling or unable to perform. We have a legal obligation to perform and have the resources to do so. Accordingly, bonds are unnecessary and we may be able to persuade customers to waive this requirement as it applies to us. If a bond is required, the Bell System has a formal agreement with St. Paul Fire and Marine Insurance Company to provide bonds to System Companies. This agreement provides that we will reimburse St. Paul for any losses incurred. Your Company's Insurance Coordinator will make arrangement under the terms of this agreement through Marsh and McLennan. Costs should be charged to Account 336.

Q. Will we contract for specific dates in writing?

(Note). This requirement was found in almost all bidding requests.

A. It would seem reasonable that if the service date specified is within normal intervals we could contract with certain qualifications to protect ourselves against delays caused by the customer, other contractors, and/or unforeseen acts of nature. It does not seem practical to contract for a service date which is less than normal intervals unless proper assurance is received from all operating departments and Western Electric Company that the service date can be met.

Q. If we did contract for a specified service date, and did not complete the job on time, would we consent to a stipulation in the bid that the customer can hire others to complete the job and subtract the costs from the bid?

A. No, we will not accept a contract which would permit the customer to hire outside installers to complete a job nor should we agree to any payment of remuneration for a specified service date not met.

Q. Should we bid for contracts which stipulate specific response times for repair service?

A. We are reluctant to establish a firm system policy on response time since Plant must plan and adjust forces to serve all customers. Moreover, we cannot provide a priority service for one customer that we do not also provide to other customers paying the same rate.

However, we should not be deterred from bidding by a requirement to specify response time or similar requirements. There are several ways of dealing with these situations.

One solution to the problem would be to bid without stipulating response time. In these cases, we should state that our policy is to provide 25 hours a day, 7 days a week, repair service for major breakdown and emergencies. Major system breakdowns, such as switchboards, attendant consoles or switching equipment are given priority treatment and we usually begin repair within two hours of notification during regular working hours. Off hour cases are handled on an individual case basis. It would be impossible to guarantee that repairs would be completed within a set time frame (4 hours, 8 hours, etc.) because some cases of trouble are difficult to find and correct and could take longer. Finally, it is important to recognize that occasionally we are faced with abnormal conditions which will affect response time; windstorms, ice storms, tornadoes, etc.

In cases where a statement of our practices is not an adequate response, we should consider bidding on the basis of an additional charge for extraordinary maintenance service under a special tariff or on a special assembly basis.

Q. If required, will we provide information on the number of repairmen we have in a particular location, their levels of training, work center locations, spare parts supply and our system for expediting delivery of critical parts?

A. Yes, we may provide this information.

Q. Will we specify in writing our installation intervals on subsequent station additions?

A. The present position is that our current normal intervals be quoted to the customer but not to be included in a contract as a future performance obligation. If we are to compete on an equal basis, it seems that this position might require some modification. It would seem reasonable that if the intervals specified in the proposal are within our present current intervals we could agree to perform with certain qualifying statements such as "except under certain unusual conditions such as hurricanes, floods, fires, etc.", and "except when additional switching equipment is required to permit station expansion".

Q. Will we bid if the bid is based on the customer's own traffic engineering and we don't agree with it?

A. Yes, if the customer insists on a bid completely responsive to his specifications we see no reason for not responding. However, where the data indicates serious shortcomings, we should identify them in our response.

Q. How will we point out shortcomings in the specifications?

A. Either an addendum to the bid, identifying the areas we do not agree with and stating the cost to correct them, or submitting an alternate bid based on our traffic engineering data.

Q. If the data provided by the customer indicates that the specified system might result in excessive ineffective attempts on our general network (for example, insufficient number of switchboard positions which would result in either slow or non-answering of incoming calls) will we provide service?

A. If we have submitted an addendum or alternate bid describing the shortcomings of the customer's data and what is required to make the system acceptable and the customer insists on the specified system based on inaccurate data we should then indicate that we will not provide basic telephone service whether the customer uses our terminal equipment or equipment provided by another supplier which will create adverse effects on our general network.

Q. Will we respond to a Request for Proposal (RFP) which calls for a specific minimum wage?

A. Yes, but we should clearly stipulate that we will not pay more or less than what our existing wage schedule calls for, and insert our own wage rates in the bid where appropriate.

Q. How should we respond to a request for fixed pricing for a specified period of time?

A. Presently we can only indicate that our rates are subject to regulation and cannot be changed without commission acceptance and in many cases without the Price Commission's approval.

However, the Flexible Pricing Plan now under trial in several companies offers the customer a Rate Stability Option which provides him with fixed pricing for terminal equipment items for five years. (Subject to regulatory commission approval.)

Q. Will we guarantee our proposal price for the period between the time we submit the bid and the time it is accepted?

A. No, if a rate change takes place during this period the customer would be subject to the new rates. However, under provisions of the Flexible Pricing Plan (subject to regulatory commission approval) the payment options and the rate stability feature are quoted on a firm 30 day basis.

Q. Can we change our pricing structure to give price options, high one-time charge, low flexible monthly payments?

A. The Flexible Pricing Plan does allow the customer a choice of pricing options. The plan provides for customer choice of a range of higher one-time prepayment charges and lower recurring monthly charges, a pricing feature contained in many bids.

Attachment A4

AMERICAN TELEPHONE & TELEGRAPH Co.,
New York, N.Y., November 20, 1973.

Subject: Guidelines for Selling in a Competitive Environment

To: Company Marketing Heads Mailing List (Copies being sent to General Plant Managers and General Commercial Managers).

From: Director of Sales Development.

Synopsis: Contains guidelines for competitive selling and a recommended procedure for serving customers who have contracted for non-Bell provided equipment.

* * *

Vigorously competing for telecommunications business has been a long standing objective of Bell System marketing policy. The right to compete aggressively carries a clear responsibility to do so ethically and legally. To consolidate and supplement previously published instructions, the attached guidelines have been developed. They will be incorporated in future Bell System sales practices.

In addition to these guidelines, we recommend a new procedure for negotiating with customers who have decided to contract with a non-Bell vendor for terminal equipment. This procedure should enable our sales personnel to increase productive selling time and should remove them from activities that could be considered in conflict with a contract. I would appreciate hearing your plans for the implementation of this recommendation.

Questions concerning the guidelines or the recommendations can be directed to W. J. Moody (212 393-4416).

At the request of Messrs. J. Hunt and P. D. Loser copies of this letter are being sent to General Plant Managers and General Commercial Managers.

F. A. McDOMEY, Jr.,
Director of Sales Development.

Attachment:

INTRODUCTION TO GUIDELINES FOR SELLING IN A COMPETITIVE ENVIRONMENT

These guidelines are to be followed by all customer contact personnel in the Bell System. They are written with the purpose of applying the Bell System sales policy to specific situations encountered in a competitive marketplace.

Certain principles apply to all situations:

The Bell System has a right to compete vigorously.

We intend to compete vigorously until the customer is committed to a competitor.

We will not interfere with commitments between our competitors and their customers.

We will at all times continue to sell services and equipment supplementary to those furnished by our competitor.

While the following guidelines cover a variety of situations, there is need for a change in our overall negotiating procedures when a customer has contracted for non-Bell equipment. With competitors using a variety of methods in selling their products and services, it is often difficult to determine whether a contract actually exists between a vendor and a customer. We, therefore, must rely on the advice of our customer as to whether he had in fact made a contract. If the customer states he considers himself committed, we must stop all sales efforts in connection with the service or equipment for which he had contracted. If the customer is vague or unsure, we must clarify the facts before we continue our sales effort. To this end we must determine whether the ingredients of a contract exist.

A contract exists when two or more persons make mutual commitments to each other, manifested in some objective provable fashion. In business transactions, the mutual commitments are normally manifested by a written agreement. It is possible through rare, for business agreements to be oral. Normally, contracts are two-sided in that each party makes a commitment to the other to supply some product or service or to pay money.

We learn of a customer's decision to purchase from a non-Bell vendor either during negotiations or when notified by a letter or a call from the customer or the vendor. Good business procedure dictates that the necessary implementation of installations of non-Bell terminal equipment be assigned to personnel whose primary function is not selling.

Such personnel should:

Receive all advice from customers, vendors or Sales asserting that a contract exists for customer-provided equipment.

State the need for interconnection devices and quote the cost for the devices specified by the customer or his vendor. The details of this order should be confirmed in writing to the customer.

Assure the customer of our cooperation and discuss the appropriateness of future sales contacts after the cutover to customer-provided equipment.

Issue the orders for Bell-provided equipment necessary for the cutover of the customer-provided equipment.

Coordinate between the customer or his vendor and the telephone company during implementation and cutover to customer-provided equipment. If it is determined that a contract does *not* exist,

Document the customer's statement that no contract exists.

Inform the customer of our interest in providing his telecommunications service.

Advise the customer that a salesman will contact him and forward the case to the proper sales group.

Additions to these guidelines will be published as required.

Appendix of other letters that deal with this aspect of Bell System policy :

General Letter from S. F. Damkroger to Company Marketing Heads "Marketing in a New Competitive Climate", 5/13/69.

GL-70-03-285, "Sale of Plant Facilities to Customers Providing Their Own Systems", 3/31/70.

GL-70-05-036, "Sales of Inside Wiring—Pricing Guidelines", 5/8/70.

GL-71-06-246, "Guidelines for Negotiating with Independent Consultants", 6/25/71.

GL-72-05-092, "General Trade Telecommunications Products" 5/9/72.

GL-72-08-075, "Short-Term Service Installations", 8/7/72.

GL-72-09-118, "Requests for Proposals", 9/21/72.

GL-73-05-100, "Dealing with Outside Manufacturers, Suppliers and Consultants", 5/9/73.

GL-73-08-078, "Serving the Business Customer in a Competitive Environment", 8/9/73.

GUIDELINES FOR SELLING IN A COMPETITIVE ENVIRONMENT

INDEX

Section

A—Using Knowledge of Vendor's Activity.

B—Negotiating with a Private Consultant.

C—Negotiating a Competitive Case.

D—Coordinating the cutover to customer provided equipment.

E—Selling to and servicing customers who have customer provided equipment.

USING KNOWLEDGE OF VENDOR'S ACTIVITY

Any information concerning a vendor's activity can generally be used for sales purposes. The exception to this is information gained in some illegal manner. In addition we should not use information gained unethically, such as eavesdropping.

1. A vendor calls us and informs us he is the agent for a particular customer.

This call should be referred to personnel responsible for implementing non-Bell installations. They should inform the vendor that we require a letter of authorization from the customer.

2. A repairman working on a customer's premise overhears a discussion concerning a vendor or is told of a vendor's activity by an employee of the customer.

Sales should be informed. Sales should determine that the information was gained in an ethical manner and if so are free to make a sales contact.

3. A customer requests a detailed billing breakdown from the business office. While furnishing the normal itemization and explanation, an attempt should be made to determine the reason for the request. A sales contact can be made.

4. During negotiation, a customer indicates he is going to call a competitive firm to get a proposal.

Avoid disparagement of the interconnect industry or a particular vendor. An attempt to make the sale and write an order should be made.

5. A customer questions the availability or legality of interconnection.

Explain that interconnection is permitted and that interconnect devices are required. In addition, we can respond with a sales effort.

6. A customer asks our opinion as to whether he should consider requesting a competitive proposal.

State that the decision is totally the customer's but we should inform him of

our consulting services as well as our interest in reviewing any competitive proposal.

7. A customer sends us a letter designating a vendor as his agent.

This should be referred to personnel responsible for implementing non-Bell installations. They should contact the customer and review the scope and duration of the vendor's authority. Key items to be discussed include the authority of the vendor to place orders and the specific accounts covered.

8. A list of customers with whom a vendor is negotiating or plans to negotiate is furnished to us by a person who has some relationship with the vendor.

We should not use this information in any way. This does not preclude using information determined by competitive trends, comments made during competitive negotiations or information of public knowledge.

9. We learn of a vendor's activity by reviewing the vendor's telephone usage.

We cannot use this information or any other that we learn in an unethical manner.

NEGOTIATING WITH A PRIVATE CONSULTANT

Our dealings with a consultant should be objective and cooperative.

1. A private consultant informs us that he is representing a customer and requests account information.

Inform the consultant of our requirement for a letter of authorization. We may make a sales contact with the customer informing him of the consultant's request and explaining the purpose of the letter of authorization. If the consultant has a contract for his consulting services, no attempt should be made to interfere with the contract.

2. What should be included in the letter of authorization?

The content of the letter is basically the same as for a vendor. It should include billing numbers and locations, duration of the authorization and the specific activities the consultant is authorized to perform for the customer.

3. What customer account information is an authorized private consultant entitled to receive from us?

The consultant should be furnished the same information that we would furnish the customer. This includes such items as current billing, normal itemization of equipment and copies of current recommendations. Requests for raw or unaudited study data should be discouraged since this data requires expert interpretation and analysis. If it is deemed appropriate to furnish such data, we should take care to caution the consultant concerning the need for accurate interpretation and application of it.

4. How much cooperation and assistance should we furnish the private consultant?

In general, we should cooperate with the consultant just as we would with a customer. Since the consultant will have a substantial effect on the customer's decision concerning his telecommunication system, we may also wish to offer explanation of equipment capabilities and tariff application that are beyond the normal interest of most customers. Sales may choose to conduct joint usage prospecting interviews if this will have a positive effect on the consultant's ultimate recommendation. However, if a consultant is in reality a vendor, we should treat him as a vendor.

5. Under what circumstances can we negotiate directly with the customer rather than with his authorized consultant?

Normally we should negotiate with the person designated by the customer. But when we feel our products or services are not being fairly represented to the customer or we feel the consultant's recommendation does not truly meet the needs of the customer, we should go directly to the customer. We should inform the consultant of our intentions but it is up to the customer to invite the consultant to our meeting or presentation. Care should be taken not to disparage the consultant but rather we should concentrate on presenting our story or recommendation.

6. What action should be taken if we think the consultant has overstepped his authority?

Inform the consultant that you think he is not authorized to act for the customer in this particular area. If he insists, go personally to the customer for a clarification. If appropriate, a second letter of authorization should be requested.

NEGOTIATING A COMPETITIVE CASE

Throughout the course of negotiations, the Bell System intends to compete vigorously. However, we must also conform with the law and with good business ethics.

1. A vendor contacts us and claims he has a contract with a customer.

This contact should be referred to personnel responsible for implementing non-Bell installations. They should contact the customer to determine whether the customer has made a contract with the vendor and, if appropriate, request a letter of authorization.

2. We receive a letter from a customer stating that he has a contract with a vendor and he directs us to negotiate with the vendor.

This letter should be referred to personnel responsible for implementing non-Bell installations. The normal verification contact should take place.

3. The vendor misrepresents our service or rates.

Should this occur during a presentation at which we are present obviously we should correct the misinformation. If misrepresentation takes place in a printed format, we should inform our customer in writing of the proper information. If we obtain a copy of the document we should send it to the appropriate Marketing and Legal personnel.

4. The vendor misrepresents what we believe to be his service or equipment capabilities.

It is difficult for us to prove or disprove a vendor's claims about his products and services but if the opportunity arises we should question the vendor about the particular item in doubt. We should refrain from stating to the customer that the vendor has misrepresented his product but we can highlight the areas of doubt and our capabilities regarding the same areas.

5. While in the process of preparing or making a recommendation (after our initial contact) the customer informs us he has a contract with a vendor. Nevertheless, he requests a presentation of our study findings and our recommendations.

We should inform the customer that we will not make a recommendation for equipment or services in competition with those for which the customer has contracted. If the customer insists, the sales management should consult with Legal to determine what conditions must be met before we proceed with the recommendation. Also, after the equipment is cutover or the customer informs us he is no longer committed by contract to the vendor, we are free to make a proposal.

6. An authorized vendor requests us to fill out a series of his forms concerning the customer's equipment and billing or our organization structure.

We are under no obligation to comply with a vendor's request for unique information or information in unique formats. The vendor should normally negotiate with personnel responsible for implementing non-Bell installations.

7. The customer asks us to comment on a particular vendor's reputation, products or services.

We should avoid expressing opinions concerning the character and capabilities of particular vendors, or for that matter, the interconnect industry in general. However, we can state facts as they pertain to a particular vendor such as, how long they have been in the telecommunication business, what products and services we know them to offer, where their products are manufactured. We may identify particular customers that the vendor has identified as being supplied by his company. We can also mention customers who have returned to us from a particular vendor as long as that customer agreed to permit us to use his name and the facts concerning the case. We should not imply that any particular customer is typical.

8. A customer indicates that a commitment from us to purchase his product would favorably affect his decision on our proposal.

We will not enter into or suggest any reciprocal agreement in order to make a sale.

COORDINATING THE CUTOVER TO CUSTOMER-PROVIDED EQUIPMENT

At the time of cutover to a competitive system there is a need for effective coordination between ourselves and the vendor. This function can be effectively performed by a dedicated group outside the line sales organization. In resolv-

ing areas of conflict, we must assure the continuity of communications for the customer as well as adherence to our tariffs and operating procedures.

1. The customer/vendor requests a cutover outside our normal business hours.

Follow our normal cutover procedures. If the vendor requests a cutover at a time outside the time we would normally have a cutover for this particular customer, we should comply with this request (if notified in time) and be reimbursed for any additional costs we incur (if tariffs permit).

2. The customer/vendor requests a partial cutover or a phased cutover over a lengthy period of time.

We should strive to make a full cutover at one time. If this cannot be done, then we should insist on some specific guidelines. Interconnection devices must be used on the non-Bell equipment that has access to the network. We will not borrow pairs in a non-Bell cable sheath nor do we loan pairs in a Bell cable sheath. We should be reimbursed for additional costs incurred if the vendor cuts his system into service on a schedule that causes us higher costs than we would normally incur.

3. The customer requests that we provide temporary service at his new location until the vendor's system is ready for cutover.

Subject to tariff restrictions, we should provide this temporary service on a special rate basis to recoup our costs as well as the appropriate return on our investment. However, we will not use any of the customer/vendor provided wire or equipment even for temporary service.

4. The vendor plans to cutover his system before we are able to provide the necessary interconnection devices.

We should remind the vendor that we will not allow connection to exchange facilities unless they are interconnected properly. If he insists we should inform the customer directly of the purpose and need of interconnection devices and that he would be in violation of our tariffs should the vendor cutover his system without them. If the system is cutover after we have informed the customer, we should deny service.

5. The vendor has difficulty at cutover and the customer requests us to provide temporary service while his customer-provided equipment is repaired.

We must provide any service we offer under tariffs which the customer requests, even for temporary installations. However, normally our tariffs should provide for special charges to be billed for short-term installations.

SELLING TO AND SERVICING CUSTOMERS WHO HAVE CUSTOMER PROVIDED EQUIPMENT

After a customer has installed competitive equipment generally we are free to compete aggressively, once again avoiding any interference with contractual obligations of the customer.

1. The customer-provided equipment is damaged by fire or flood, and the customer requests immediate temporary service.

This request is in reality a request for installation. Generally, no installation should be undertaken until our out-of-service customers are restored. The amount of service should be determined by a consideration of a variety of items; criticality of communications service for the customer, current work loads and requirements of other customers, and the profitability of temporary service. A strong sales effort may be undertaken to convince the customer to retain his temporary equipment and to expand it as required.

2. After a customer has made a contract for customer-provided equipment with a vendor at what time can we again attempt to sell our competitive equipment?

Refrain from selling competing services until the customer-provided equipment has been installed and cutover. No advice or suggestions should be made concerning the customer's contract for his equipment.

3. Can we attempt to stimulate usage, i.e., Phone-Power or WATS, for a customer with customer-provided service.

Absolutely. We intend to continue to sell services that are in addition to or supplementary to those furnished by our competitor.

4. Traffic information shows that a customer requires more trunking than his customer-provided equipment has the capacity to handle.

We can notify the customer and inform him of our findings and recommend the additional trunks. If his shortage of trunks is having a negative effect on the network we should work with the customer to alleviate the problem. The same procedures should be followed with customers who have customer-provided equipment as with Bell-provided customers in situations when the lack of trunks have an adverse effect on the network.

5. A customer requests our assistance in breaking a contract he has with a vendor.

No assistance or advice should be given to the customer concerning his contractual obligations.

6. A customer requests that Bell provide maintenance for his customer-provided equipment.

At the present time it is not our intention to provide repair or maintenance service on customer-provided equipment. The customer should be informed that we will not repair or maintain his system.

7. A customer requests that Bell purchase his system and either replace it or maintain it in place.

The Bell System is under no obligation to purchase a customer-provided system, but we may elect to do so where such a decision is to our economic advantage.

Attachment B

SUMMARY OF TRAINING COURSES FOR SALES CONTACT PERSONNEL

1. *Communications Consultant Selection Guide* is a 1 day pre-employment workshop designed for the applicant to demonstrate certain skills that are required to be successful in the sales field. The applicant participates in role playing and case method to solve business problems.

2. *Basic Sales Training Course* is a 6 week course that teaches new employees professional selling skills and basic products and services up to and including key systems. The course is self-paced programmed material with extensive role playing situations.

3. *Intermediate Sales Training Course* is a 3 week course that reinforces the professional selling skills and teaches the student the complete PBX line including Centrex service. The course is self-paced programmed material with extensive role playing situations.

4. *Advanced Sales Training Course* is a 6 week course that teaches the student the sales skills and product knowledge to handle the majority of cases in the Intercity and Data Markets. The course is a self-paced program with cases and role playing situations.

5. *Education Industry and Hospital Industry Training Courses* are two—3 day programmed courses designed to familiarize sales personnel, who are going to handle either of these markets, about the unique characteristics of these industries. They are also taught how communications can solve many of the problems in these dynamic markets.

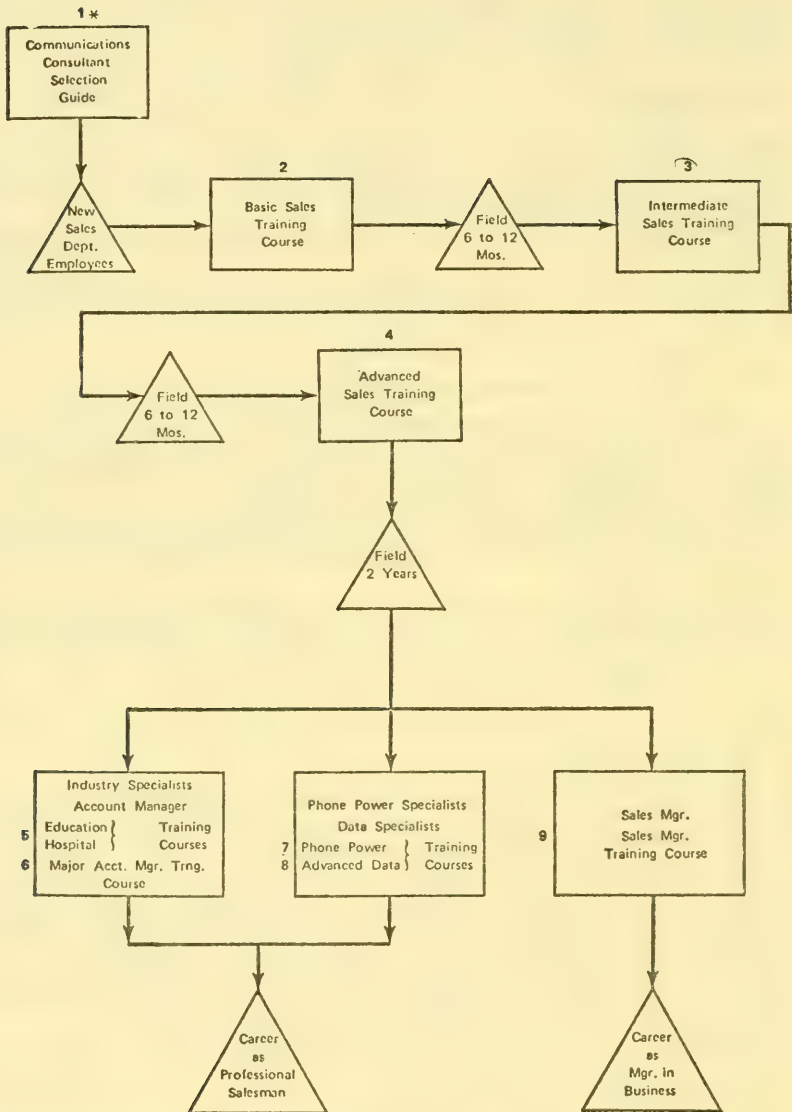
6. *Major Account Manager Training Course* is under development. It is being designed to train selected sales personnel who handle large, complex accounts. They will be fully equipped to represent their company as communications experts to solve complex communications problems for their accounts.

7. *Phone-Power Course* is a 10 day course designed to equip the salesperson with the necessary skills to research and sell Phone-Power usage programs and train customer personnel in Phone-Power calling techniques.

8. *Advanced Data Course* is under development. It will equip a sales person with the knowledge to handle the most complex data cases. He will be trained in all areas of data in business and will be taught the use of communications as a solution to customer's data problems.

9. *Sales Manager Course* is a 2 week course designed to teach a Sales Manager the principles of Sales Management as outlined in the Sales Operations Guide. It highlights planning, and managing the sales job and developing the sales skills of the people reporting to him.

Flow Chart of Training for Sales Contact Personnel



* Numbers correspond to summary listings on previous page

COURSES TO IMPROVE SELLING SKILLS OF SALES PERSONNEL

Selling Communications Competitively is a 3 day course to equip the sales personnel to sell effectively in competitive situations. It teaches economic costs analysis and new methods of usage prospecting, recommendation and proposal.

Planning, Preparing and Presenting Proposals is a 3 day course to improve the skills of a salesperson to present effective proposals both written and oral.

Basic Sales Training Course

This course is designed to teach new Sales Contact Personnel the professional selling skills we utilize and the products and services we sell our customers. The major learning points that are taught our salespeople in a competitive situation are: (Module V—Part 2—Topic V-12 Audio Tape V-1) that competition consist of many reputable vendors that provide excellent equipment; that competition is a way of life in our business today.

A binder titled "Guidelines for The Sales Contact Person" (Chapter 15) teaches the student the following:

Who the competition is and the types of competition

How to conduct ourselves in a competitive situation in terms of the anti-trust laws. It includes explanations concerning our policy in matters concerning: Sales leads, Inducing Break of Contract, Tie-In Sales, Disparagement.

How to handle a competitive situation

Advantages of buying from the Bell System

What a customer should consider when evaluating a communications proposal

Selling Communications Effectively

This course may be taught to sales contact people after the Basic Sales Training Course. It teaches the sales contact person to handle competitive situations from start to finish.

The course takes 3 days to complete.

The course teaches the following:

1. We are going to compete in service, equipment and price and we are going to remain in the station hardware business. (Unit 1, Section 2)
2. The strengths and weaknesses of our system. (Unit 1, Section 3)
3. A typical market strategy of a competitor. (Unit 1, Section 4)
4. That the salesperson uncover the needs and wants of the customer (Unit 2, Section 2)
5. The reasons why a customer buys from a competitor. (Unit 2, Section 4)
6. The "20 Question Brochure". (Unit 2, Section 4)
7. Fact finding for cost analysis. (Unit 2, Section 5)
8. How we should conduct ourselves when presenting a proposal with a competitive salesperson present. (Unit 5, Section 1)
9. How to conduct ourselves in an indirect competitive situation.
10. How a competitor constructs a proposal. (Unit 5, Section 3)
11. How a counter proposal should be developed with emphasis on highlighting the "20 Question" areas. (Unit 5, Section 4)

The Company Policy that no attempt will be made to break any contract between a customer and a non-Bell vendor. (Unit 5, Section 4, Page 4)

Intermediate Sales Training

The Intermediate Sales Training Course teaches the student to sell and implement PBX services. Units 5 and 6 of the total of 14 units and a job aid (Job Aid Booklet) address competition. The training course was published in 1972.

Unit 5—This unit provides the salesperson with background knowledge necessary to deal with a customer who has received a competitive proposal. It specifically teaches the student:

How to recognize the various types of competitors.

How to gather information about the competitors proposal.

How to make sure the customer understands the competitive offer.

How to prepare a counter proposal.

Unit 6—This unit is a review and application of the information learned in Unit 5, ie, the student formulates a written counterproposal. The student also learns to process a request from a customer to interconnect a non-Bell serving vehicle.

NOTE.—Units 5 and 6 use the names of competitive suppliers such as Norcelco, Fujitsu, Stromberg Carlson and Nippon Electric. These names are used instead of the words "Competitive Supplier", ie, "Suppose that your customer has indicated that he has received a proposal from Beeker National recommending a Stromberg Carlson 30 SF on outright purchase. Your job is to prepare for an interview".

Job Aid Booklet—This is a binder which contains several job aids which are intended for use during the sales process.

Section 4—Ways of Obtaining Communications Equipment. This section discusses the several ways in which the customer can pay for communications equipment, both from Bell and competition.

Section 5—Contains the 20 Question brochure.

Section 6—Contains a cost comparison worksheet which aids the salesperson in comparing the cost of non-Bell equipment with Bell equipment.

Section 7—Contains a flow chart which aids the salesperson by showing the steps he would take as he analyses a competitive proposal and prepares a counterproposal.

Planning, Preparing, Presenting, Professional Presentations

The Planning, Preparing and Presenting Professional Presentations Training Course is designed primarily to improve the ability of presenting professional proposals to our customers. The salesman is taught to:

Highlight our service and the advantages of doing business with the Bell System (Unit 11, Section 1, page 52)

That in a competitive situation we should attempt to procure a copy of the competitor's written proposal, including costs, equipment and features. (Unit 11, Section 1, Page 2)

The course also stresses the need for and importance of professional salesmanship and effective sales presentation and it points out the many areas the salesman should plan to counter a competitive situation such as use of money, insurance, emergency service, references to other costs and maintenance. (20 Questions) (Unit 11, Section 1, Page 53)

Advanced Sales Training Course

Advanced Sales Training Course teaches the student the sales skills and product knowledge to handle the majority of cases in the Intercity and Data Markets. It covers 6 weeks, is self paced, and involves cases and role playing situations.

The Advanced Sales Training course follows the Intermediate Sales Training course by about six to twelve months, or approximately twelve to twenty-four months after entering the Sales Department.

The thrust of Bell System interconnection policy is expressed on Page 19 of the Products Section:

We welcome use of the network for customer provided terminal equipment and make connection to the network as easy as possible. But we must maintain control of the network to provide the best possible service to all our customers.

Advanced Data Sales Training

A nine week course designed to teach selected salespeople the necessary technical, organizational and sales skills to function effectively as data specialists.

Data communications services normally involve more than one vendor. (Only in the case where our teletypewriters are used can we furnish a complete data service)

The data specialist must therefore know about the many suppliers of terminals, modems, communications processors and inter-city facilities.

Emphasis is placed on the functions and features of the services or devices.

The primary sources for informations used in teaching are commercially

available references such as Data-Pro 70, Auerbach Data Communications Reports and trade journals.

When in a competitive situation, the specialist is taught to present and stress the capabilities and benefits to the customer of using our services. He is further taught not to disparage in any way the services or equipment of a competitor, and to confine any statements about him to matters of proven fact.

ATTACHMENT C.—HISTORY OF BELL SYSTEM INNOVATION KEY TELEPHONE SYSTEMS AND AUXILIARY PRODUCTS

Date	Type of equipment	Description
Prior to 1938	Wiring plans	Customer demand for services requiring station switching facilities was met with "wiring plans" which provided separate Keys and Keyless telephone sets, subscriber sets, and equipment boxes and apparatus cabinets to furnish the basic features of pick-up, hold and incoming lines.
1938	1A key telephone system.	A family of station switching arrangements using telephones with built-in switching keys along with standardized equipment boxes which could be arranged to provide a combination of a variety of customer features. Thus the "building block" or modular concept came into being.
1948	Key sets with illuminated buttons.	The introduction of key sets with illuminated buttons completed work that resumed following the war period.
1949	500 type telephone	This new telephone set offered the following major improvements: <ol style="list-style-type: none"> 1. Improved transmission (roughly 5 db in transmitting and 5 db in receiving). 2. Improved dial (extended dial range). 3. Improved ringer. 4. Loop equalization for more uniform transmission. 5. Improved physical design from both appearance and human factors points of view.
1952	1A1 key telephone system.	This system incorporated wire spring relays while still using the "building block" approach. The intent was to make systems (over 6 lines) lighter, more economical and easier to install. The new system introduced several innovations. <ol style="list-style-type: none"> 1. A simplified central office or PBX line circuit with three relays instead of five. 2. Holding under control of an auxiliary (A) lead instead of via the line tip and ring. 3. Several factory wired packages of interconnected units for various combinations of services and features called key service units. 4. A winking lamp signal for lines being held. 5. A dial selective intercom system.
1953	1A telephone answering set.	This set introduced automatic answering service. It included a capacity for a 30-second announcement and 10 minutes of recording.
1954	Color telephones	Decorator colors introduced.
1956	570 type telephone	An emergency service telephone for municipalities.
1957	Bell chime ¹	Beginning of the marketing of "vertical telephone service." Offered centralized ringing and customer selectable signal characteristics.
1958	3A speaker phone	This set marked the introduction of voice-switched, hands-free telephony and was the first station product to use transistors.
1958	Call director ¹ set	This set handles several incoming, outgoing and interoffice calls simultaneously.
1959	Princess set ¹	Nite light dial light features were introduced with this set along with miniaturization and change in style of telephone set.
1960	Electronic artificial larynx.	A low-cost aid designed to assist people with disabled larynx to talk.
1961	Card dialer	A repertory dialer.
1962	20/40 dial pak	The 20/40 dial pak was an expansion in Key Telephone intercommunicating service. It was designed for customers in the 15 to 40 station range with a high volume of intercommunicating calls.
1962	Panel telephone	A built-in residence telephone service center.
1962	G6 and G7 handsets	Handsets equipped with variable gain receive and transmit amplifiers, respectively.
1963	G8 handset	For use in noisy locations (transmitter push-to-talk switch).

See footnote at end of table.

ATTACHMENT C.—HISTORY OF BELL SYSTEM INNOVATION KEY TELEPHONE SYSTEMS AND AUXILIARY PRODUCTS—Continued

Date	Type of equipment	Description
1964.....	1A2 key telephone system.	From the user's point of view, the 1A2 key telephone system, was not much different from the 1A1. Inside, however, it was a completely new system, streamlined and modernized circuits and equipment. Solid state components, printed wiring boards and miniature relays replaced older types of equipment. A complete new set of Key Telephone Units (KTU's) consisted of plug-in circuit boards, smaller and lighter than the older units. Printed wiring eliminated most of the internal wiring of the individual units. The plug-in units eliminated the tedious and expensive screw terminal wiring methods used in the 1A and 1A1 systems.
1964.....	Touch-tone ¹ set.....	A radical change in signaling method which offered convenience and speed to the customer at a reasonable price and opened the door to end-to-end signaling.
1964.....	Business interphone.	A business interphone system uses separately mounted microphone—loudspeaker units to permit two-way intercommunication among up to 18 stations without using the handset at the called station.
1965.....	Antique/decorator policy.	This policy was established in response to customers' desires for a styling choice. It allowed customer telephone set enclosures to be used in place of those provided by the telephone company.
1966.....	Trimline ¹ set.....	This set introduced the dial-in-handset telephone.
1966.....	Alarm reporting telephone.	This product satisfied the need of a special market.
1966.....	Call-a-matic automatic dialer.	Repertory Touch-Tone telephone with customer changeable magnetic memory.
1968.....	SIA impaired hearing tone ringer.	A ringer for hard-of-hearing people.
1969.....	RC touch-tone circuit.	Application of microcircuit technology in telephones which represented greater reliability, reduction of weight and size of dial, and eventually lower cost.
1969.....	Code-Com.....	A telephone adjunct for totally deaf customers.
1969.....	Voice coupler.....	This coupler allowed connection of customer-owned equipment and reflected a new interconnection policy.
1969.....	One number dialer.....	A versatile adjunct to many dialed-up services.
1971.....	50A portable conference set.	A product aimed primarily at the education market. This set permits groups of about 50 people to participate in discussions over long distance telephone lines and can be set up wherever an electrical outlet and telephone jacks are available.
1971.....	Signalman.....	A telephone aid for the deaf.
1972.....	Modular telephones.....	A low-cost plug and jack designed to reduce costs and permit new business methods.
1972.....	Universal line cords.....	A 1 color line cord designed to reduce expenses.
1973.....	4A speakerphone.....	This speakerphone (2-piece) provided improved service and appearance.
1973.....	COM Key ¹ 718.....	These systems pulled together the most popular key system features in packages wired and tested in the factory in order to reduce installation costs. In addition, many new features have been added. These systems extend from 2 to 14 lines with up to 34 stations.
1974.....	COM key ¹ 1434.....	
1974.....	Touch-a-matic.....	A compact automatic touch-tone dialer featuring such new items as a 48 button address field, and electronic dial, a compact speakerphone, a new switch-hook, a thin film active network, a dial-tone detector, an IGFET shift register memory capable of storing 48, 15 digit numbers and a "one-touch" feature such that the depression of a single name, address button will initiate and complete a telephone call on the speakerphone. This product is scheduled for introduction in late 1974.
1974.....	Small telephone system (STS).	The STS is currently being trialed. The STS was developed for the small business user. Integrated circuits permit all necessary control and switching equipment to be incorporated within a control telephone, thereby eliminating the need for a separate key service unit.
1974.....	Design line telephones.	Uniquely styled telephones designed and manufactured by outside suppliers and Western Electric. These telephones are fashioned to complement various residence and business interior decors. Decorative enclosures are furnished by the telephone company, purchased by the user and are combined with telephone company-owned standard components to function as regular telephone instruments.

¹ A registered mark of American Telephone & Telegraph Co.

ATTACHMENT D.—HISTORY OF BELL SYSTEM INNOVATION PBX MARKET

Date	Type of PBX	Description
Prior 1930	505	These manual cordless switchboards known as monitor boards were key operated. It was a small self contained unit that could be mounted on a desk. The 505 had a capacity for 3 lines and 7 stations, the 506—5 lines and 12 stations.
	550	A series of manual cord switchboards with a capacity of 10 trunks and 30 stations.
	551	A jack and plug operation increased the switching capacity.
	605	
	701A	The first dial systems used for PBX service with step-by-step operation. This consists of a switch driven by electro-magnets and ratchet mechanisms in a vertical position to select one of 10 horizontal contact points.
	740	
	711	
1938	755A	This system provided service to small business and large residences. The switching equipment was housed in a single cabinet. A six button set was usually used for dial stations. Local calls were dialed and central office connections made by operating keys at the telephone station.
1948	555	It was a small manual nonmultiple switchboard designed for a full capacity of 120 stations or 60 stations.
1948	607	A dial PBX type switchboard. This was designed for a multiple-position operation. It was usually associated with a 701 dial system.
1954	557	A secretarial type intercept switchboard, it has a capacity of 100 secretarial lines. It is designed to serve answering services and professional people.
1957	556	Another dial type switchboard, the 556 was designed for a nonmultiple operation. It was usually associated with a 740 or 756 type system.
1957	756	Dial PBX with a capacity of 40-60 lines crossbar switching with series packaging. It is designed to serve customer with needs ranging between key telephone systems and larger dial systems.
1960	608	A dial type switchboard is applicable for both multiple and nonmultiple operation. It may be used with 701, 740, 756, 767, 770, 800A, and ESS101 systems. It has a capacity of up to 360 lines and 80 trunks.
1963	757	A common control crossbar switching system, it has a capacity of 40 to 200 lines. Up to three consoles may be used on a switched looped operation.
1963	101ESS	First electronic PBX introduced. 200, 340, 2,000, or 4,000 line capacity solid state operation with advanced features. Offers an operation similar to computers. Divided into two parts—a control unit and a switch unit which is located on the customer premises.
1964	761	This PBX provides service to hotels and motels with a 20 to 40 line capacity. All switching equipment is packed in one cabinet. The attendant console houses DDS, message waiting and message registers.
1966	608	A cord switchboard designed for use as a multiple operation or a single position with a manual or dial system. Offers a modern appearance and operating features for customers who require manual PBX service or switchboard facilities for dial PBX systems. Has a capacity of up to 2,400 lines and 480 trunks.
1967	800	A PBX suited for the small business customer with a requirement for 80 lines or less. System components are all electronic. Stresses quiet operation for general office installation.
1970	558	This system serves the customer who needs a manual system. It allows absolute control of calls by the attendant. It is housed in a modern single cabinet. Capacity is 40 manual stations and 10 lines.
1971	770A	A dial PBX system with crossbar switching. Available in 40 to 400 line size it has at wide range of features and traffic capability. Switched loop operation or direct-trunk termination can be provided. Hotel/motel features are also available.
1971	805A	Designed to upgrade the small manual customer. This system combines crossbar switching with a solid state common control. It is available in packages of 18, 38, or 57 lines. It is designed for light traffic.
1971	801A	This is a 270 line electronic PBX using a ferrered fenced switching networks and solid state common control. It has available a wide range of line sizes, trunks, features and call carrying capacities.
1973	812A	This is the latest system PBX. It can accommodate up to 2,000 lines in 160 line increments and up to 14 attendant consoles. It can be housed in from 2 to 13 cabinets. A combination of small crossbar switches operating with solid state common control, it can handle a large number of calls quickly.
CONSOLES		
1961	6-9	These consoles were used with the 701A dial system and No. 5 crossbar operation;
1962	1A-2A, 3A-4A	Now manufacture discontinued, these consoles also operated with the 701 dial system, ESS 101, and a No. 5 crossbar facility.
1962-3	5A-6A	This type console was designed to function with the 701A and B, 740E system.
1963	18-28	Used with No. 1 and No. 101 ESS they are available currently for additions to existing systems.
1965	3C, 4B	Associated with the 756A PBX system.
1966	58-68	Operates with the 770A PBX system.
1966	14, 15, 16	Designed to work with 800A, 801A, and 805A systems.
1970	29	Works with the 558A manual PBX system.
1972-73	20-28	Associated with 701B, 701A, 756A, 757A, 770A, 800A, No. 101 ESS PBX systems.
1972-73	30 38	Functions with the 701B, 701A, 756A, 757A, 800A, and No. 101 ESS PBX systems.
1972-73	40-48	Produced to work with the 701A, 757A, 770A, 812A, No. 101 ESS PBX system.
1972-73	50-58	Designed to associate with 701A, 757A, 770A, and No. 101 ESS.
1973	50 CPS	Console developed to work with PBX service or used with Nos. 1 and 2 ESS for Centrex Small Business.
1974-75	60-68	These consoles are planned and will be used with the 770A PBX system.

ATTACHMENT E.—HISTORY OF CENTREX SERVICE INNOVATIONS

Date	Type of Centrex	Description
1961.....	Centrex.....	Using the new No. 5 Cross Bar Switching Equipment Centrex Service was introduced as an entirely new product for large business customers offering the following service innovations: (1) Direct inward dialing. (2) Identified outward dialing. (3) Attendant transfer of incoming calls. (4) Restricted stations. (5) Night service.
1962.....	Centrex Dormitory Service.....	Centrex Service was broadened to include service in college dormitory rooms. This made the service more valuable for colleges and universities.
1964.....	Centrex II.....	A new Centrex II package offering was introduced to further expand the service and provide additional customer desired features that included: (1) Add-on (2) Consultation hold (3) Individual call transfer
1965.....	Airport Centrex Service.....	Due to the increased demand for Centrex Service and the increased availability of No. 5 Cross Bar Central Office Equipment, the minimum number of stations required on a Centrex system was reduced to 100. Further developments in Centrex service spanned the introduction of Airport Centrex Service which allowed many small users such as individual ticket counters, ground transportation suppliers, etc. to be grouped together and share one Airport Centrex System.
1968-74.....	No. 1 ESS Centrex Service.....	The introduction of the No. 1 ESS electronic switching equipment made possible further innovations due to the ability to program additional features using "generic programs." Generic programs are the basic software package provided with each electronic switching/stored program control system. The particular package provided is determined by the particular needs of the installation (e.g., Centrex service required in a No. 1 ESS office). Changes in generic programs for existing installations are made to add new service features and to realize operating and maintenance efficiencies. New systems are equipped with the latest available generic program of the type needed for that installation. Generic programs are provided with No. 1 ESS, No. 2 ESS, No. 2A ESS, and TSPS No. 1 ETS and AIS. The introduction of No. 1 ESS is at various stages throughout the system. Features available with the existing generic programs are in attachment F.
Current.....	Centrex ESS No. 1.....	Centrex Service is being made available to customers with equipment of less than 100 lines and is referred to as Centrex Small Business. This makes available the benefits of Centrex Service to the small business user.

ATTACHMENT F.—CENTREX FEATURES

Features	Description	Program
1. Attendant camp-on	Allows incoming listed number calls, which the attendant attempts to complete to a busy station, to be held waiting and then automatically connected when the called station becomes available.	CTX-5 and higher.
2. Attendant conference 6-port.	An attendant may establish a conference connection of up to five conferees. Centrex stations may reach the conference console by dialing an access code.	CTX-2 and higher.
3. Attendant control of conference, 6-port (conference move).	The attendant is allowed to move a call from a conference port back onto a console loop by dialing the conference move access code plus a digit representing the party (port) to be moved.	Do.
4. Attendant control of facilities.	Used to allow the Centrex attendant to temporarily deny stations dial access to tie trunks, WATS lines, CCSA trunks, FX lines or AUTOVON trunks. When activated, routing of calls for these facilities may optionally be to the attendant, an announcement, or a tone trunk.	CTX-4 and higher.
5. Attendant trunk busy verification.	Allows Centrex attendant access to members of busy tie trunk groups for the purpose of verifying a busy condition, performing certain tests or preempting for an important call.	CTX-5 and higher.
6. Automatically identified outward dialing.	Provides for automatic station number identification of charged out dialed calls from CU Centrexes. Equipment at the CU identifies and transmits the number over a data link to the central office for AMA.	CTX-4 and higher.
7. Busy verification of lines.	Gives Centrex attendants the ability to verify the state of Centrex lines and to break in on a conversation.	CTX-5 and higher.
8. Call forwarding—busy line.	Provides for automatic routing of incoming DDD, CCSA, priority AUTOVON or selected tie trunk calls or selected tie trunk calls to the attendant on a preselected Centrex station when the called station is busy.	Do.
9. Call forwarding—busy line.	Allows busy line forwarding of intra group originated. Calls as used as incoming.	Do.

ATTACHMENT F.—CENTREX FEATURES—Continued

Features	Description	Program
10. Call forwarding don't answer.	Called station does not answer within three ringing cycles-----	Do.
11. Call forwarding—don't answer.	Allows don't answer forwarding of intra group originated calls as well as incoming.	Do.
12. Call forwarding—outside (CTX).	Allows Centrex stations with call forwarding to also forward incoming calls to numbers outside the Centrex via dial "9" trunks.	Do.
13. Call forwarding—variable (POTS).	Allows a customer to have incoming calls forwarded to another line.	All generics.
14. Call forwarding—variable (CTX)	Allows a Centrex station to have incoming calls forwarded to another line within his Centrex system.	CTX-5 and higher.
15. Call hold-----	Allows a Centrex station to place any call involving his station on hold by flashing and dialing a special code. The station is then free to originate another call. The first call is retrieved by dialing the hold code a second time.	Do.
16. Call indicator lamps.	Special lamps arranged to indicate the origin or type of calls as they appear on the attendant console loops. Lamps for DID, CCSA, tie line and AUTOVON busy line and don't answer forwarded calls.	CTX-1 and higher.
17. Call pickup-----	Allows a Centrex station to answer calls directed to another station within the same pick-up group.	CTX-6 and higher.
18. Call waiting lamps---	Provides lamp signals on Centrex consoles to indicate the relative size of the queue (number of calls waiting) with variable trigger based on the number of active consoles	CTA-1 and higher.
19. Call tracing (TRC)---	Traces all incoming calls to the customer's DN and types a record on the maintenance TTY.	All generics.
20. Call transfer—attendant.	Stations connected to incoming exchange network or CCSA calls must flash the attendant for transfer to another station within the Centrex.	CTX-1 and higher.
21. Call transfer—individual.	Centrex stations with three-way calling are given the ability to transfer incoming calls only within the Centrex.	Do.
22. Call transfer—outside.	In combination with call transfer—individual or unlimited permits Centrex stations to transfer (under certain conditions) or add-on to outside stations via dial "9" trunks, WATS, and CCSA facilities.	CTX-4 (issue 4).
23. Call transfer screening.	A modification of call transfer individual allowing the controlling station to reach a fully restricted station within the Centrex extension range for consultation (no three-way connection). Where there are two or more CTXN's these attempts may be restricted to one CTXN.	CTX-5 and higher.
24. Call transfer—unlimited.	An expansion of call transfer—Individual allowing Centres stations to hold and transfer established connections with message network, tie line, FX trunk, or, CCSA facility.	CTX-1 and higher.
25. Call waiting—intragroup (Centrex).	Permits intragroup calls to a busy station equipped with call waiting to activate the feature.	CTX-5 and higher.
26. Call waiting—originating (Centrex).	Allows application of call waiting from the originating station to any busy station in the same Centrex group.	Do.
27. Call waiting—terminating.	Provides a tone indication to a busy line that an incoming call is waiting. The first party may be held while answering the new call.	CTX-2 (POTS), CTX-5 (CTX).
28. CCSA 100 percent sampling.	Provides for AMA recording of all CCSA calls at the CO Centrex--	CTX-1 and higher.
29. Code call—answer---	The code called party can be connected to the calling party by dialing the answering code from any station in the Centrex.	Do.
30. Code calling-----	Allows attendants or station users to dial an access code and a two or three digit called party code to activate signaling devices with a coded signal corresponding to the called code.	Do.
31. Conference calling---	Allows a Centrex station to establish a conference connection up to six conferees (including the originator) without the aid of the attendant.	CTX-6 and higher.
32. Consultation-----	A variation of three-way calling allowing one party to be held while consulting with another.	CTX-1 and higher.
33. Dial thru attendant..	A Centrex station user may complete the dialing on an outgoing call after the attendant has selected the facility.	CTX-5 and higher.
34. DID intercept-----	Incoming calls to disconnected or unassigned numbers within a Centrex group may be intercepted in one of the following ways: (1) Centrex attendant (regular charge treatment), (2) common recorded announcement (no charge treatment), or (3) unique Centrex announcement (no charge treatment).	CTX-1 and higher.
35. Flexible route selection.	Provides up to four private routes selected FX, CCSA, WATS-FT WATS-MT, or announcement. From chargeable 7 or 10-digit interoffice calls may be attempted using the routes in a pre-determined order. An optional fifth route (final) is provided via the DDD message network.	CTX-6 and higher.
36. Group speed calling..	Allows Centrex stations access to a 2-digit speed calling list belonging to the Centrex group. A Centrex group may have as many as 100 such lists and a station may access one of these.	CTX-1 and higher.
37. Individual billing directory number.	Provides station billing identification on WATS calls from CO Centrex customers. When used in conjunction with WATS chart columns, the WATS Band No. may be provided. Also used with dial "9" calls from PBX-Co attendant.	CTX-2, 3 and 4 (issue 4). CTX-5 (issue 2) and higher.

ATTACHMENT F.—CENTREX FEATURES—Continued

Features	Description	Program
38. Inhibit night service.	Inhibits the accidental activation of night service in a Centrex where the consoles have 24-hour coverage. Does not affect emergency night service.	CTX-2 and higher (issue 5).
39. Multiline hunt—circle.	Allows hunting to start at the terminal number of the dialed number and hunt to end of group and then return to group terminal No. 0001 and hunt to the terminal number proceeding the one associated with the dialed number.	CTX-6 and higher.
40. Multiline hunting—preferential.	Allows individual terminals in a MLHG to have separate "preferential" lists consisting of any 18 terminal numbers in the MLHG and they can be in any sequence. If all "preferential" terminals are busy, the last "preferential" terminal becomes the start hunt terminal for the regular or circle MLHG.	Do.
41. Multiline hunting—regular.	PBX classes of service or hunting groups usually in excess of 6 terminals. Hunts over a group of lines. Always beginning at the LDN of the group and hunting to end of group. No. DN's are required except for 1st line of group. All originating calls are billed to same billing number.	All generics.
42. Multiline hunt—uniform call distribution.	Allows equal distribution of incoming traffic to the terminal numbers in the MLHG. A pointer in call store marks the last terminal to receive a call and puts the next call on the next idle line. Circle hunt is mandatory with uniform call distribution.	CTX-6 and higher.
43. Night hunt number.	Directory number assigned for night service and power failure transfer features.	CTX-1 and higher.
44. Paging.	This feature permits attendants and station users to have dial access to customer-owned loud speaker or radio-paging equipment to selectively tone alert or voice page individuals.	Do.
45. Position make busy keys.	Position make busy keys may be assigned to positions (lines) of a MLH customer. Each key may control up to 20 lines. When operated, positions controlled by the key will be busy to incoming calls.	CTX-6 and higher
46. Queuing on multiline hunt.	Allows incoming call to a MLH group to be placed in a "first in-first out" queue (on a ringing trunk) when all the MLH terminals are busy. Announcement and/or CW lamp optional.	Do.
47. Random make busy keys.	Keys associated with hunting terminals of a MLHG to provide a busy or stop hunt condition. Between 1 and 10 keys per group may be active at one time for make busy, but only 1 for stop hunt. Any number of LEN's may be assigned to a random make busy key.	All generics.
48. Satellite operation.	Allows operation, as a system, of two or more geographically separated switching machines for a single Centrex customer. Attendant services are provided at the main location.	CTX-2 and higher.
49. Series completion.	Hunts up to 16 directory numbers in a predetermined sequence. The DN's need not be sequential. Each DN can also be dialed individually and hunt will proceed from that DN to end of series completion group.	All generics.
50. Shareable speed calling.	A POTS arrangement allowing one and two-digit speed calling lists to be shared with other lines.	Do.
51. Shared trunk answer any station.	The trunk answer feature may be shared with other Centrex groups, including satellites.	CTX-1 and higher.
52. Special billing number.	Required for any individual line whose billing will be to a number other than its own.	All generics.
53. Special trunk billing.	Cancel the automatic number identification (ANI) availability to the TSPS causing TSP/s or CAMA operator identification of the calling number.	Do.
54. Speed calling—one digit.	Allows placing of calls to a repertory of 8 (6 in centrex) frequently called numbers by dialing an access code "11" POTS, "1" Centrex followed by a one-digit code.	Do.
55. Speed calling—two digit.	Allows placing of calls to a repertory of 30 numbers by dialing the access code "11" followed by a two-digit code.	Do.
56. Split console groups.	A Centrex Complex (MCXN) arrangement splitting attendant functions into separate groups, e.g., dial "0" vx LDN traffic.	CTX-2 and higher.
57. Station restriction.	Provides for variation in the out-dialing treatment among the nonrestricted centrex stations allowing or disallowing calls based on the code dialed.	CTX-1 and higher.
58. Three-way calling.	Allows a subscriber to establish a talking connection involving himself and two other parties.	All generics.
59. Stop hunt number.	Directory number assigned to the hunting terminal of a multiline hunt group with which a stop hunt key is associated. Operation of the key causes hunting to cease at that number.	Do.
60. Transfer dial tone.	An option applied to call transfer allowing the choice of regular or interrupted dial tone after transfer flash.	CTX-2 and higher (issue 5).
61. Trunk answer any station.	Allows any non-inward restricted station in the Centrex to answer incoming calls by dialing a special code when the attendant positions are in night service.	CTX-1 and higher.
62. Trunk group busy memory.	Provides for up to 60 trunk group busy lamps on a 2B type attendant console. These lamps are controlled by the trunk busy memory circuit. Requiring an additional console position for the primary console on the data link. Used to keep attendant informed of trunk availability.	Do.

ATTACHMENT G.—AUTOMATIC CALL DISTRIBUTOR DEVELOPMENT CHRONOLOGY

Year of introduction	Model	Significance
1946-----	4A order turret----- 6A (198 trunks—200 attendant positions).	Various size systems up to 120 positions. First Auto. System SXS Switching.
1963-----	3A (198 trunks—200 attendant positions).	New features, improved positions equipment, audible FX I.D., call transfer plus other new features.
1964-----	2A (56 trunks—60 attendant positions).	First cabinet system, Xbar equipment, for smaller customers, same features as 3A.
1968-----	3A-----	Modification to permit tripling capacity.
1969-----	3A-----	Split gate feature permits 10 separate customers to be served by a single 3A or one system to be divided into 10 sub-groups for one customer.
1972-----	ESS/ACD-----	In June 1972 A.T. & T. advised airlines that development of ESS/ACD would be complete in 1975 and available in 1980.
1973-----	2B (68 trunks—70 attendant positions). 4A (20 trunks—15 attendant positions).	Less space, can double capacity by adding another 2B. 756 cabinet, designed and priced for smaller customers.
1974-----	ESS ACD-----	In January A.T. & T. advised airline industry that development was underway and the phase I features would be available in 1975. Phase II features would be available beginning in 1976.

NUMBER 1 ESS/ACD

FEATURES—PHASE I

Centrex II Features
 ACD Basic Services
 Automatic Intraflow
 Automatic Interflow
 Central Office Service
 Phase I Force Administration Data Services (FADS)
 City of Origin Announcement
 Multiple Delay Announcement
 Split Management (31 splits)
 Agent Positions (Up to 1000)
 Supervisory Positions

PHASE II

Improved Management Information System
 Display of Phase I Fads
 Customer changeable routing of calls
 Local recording of announcements
 Flexible length announcements
 Customer control of delay threshold
 Visual incoming call identification

Attachment H

CONTINENTAL AIRLINES,
 Los Angeles, Calif., June 3, 1974.

J. E. CLYDE,
 Division Marketing Manager, Southwestern Bell Telephone Company,
 Houston, Tex.

DEAR MR. CLYDE: You will no doubt recall that Continental Airlines recently implemented the installation of a COAM digital ACD/EPABX at our Houston reservations office. I want to comment on the outstanding cooperation and skill with which the telephone company and part of the installation group conducted and completed this job on schedule; particularly, I want to mention the individuals listed below:

Glen Wakefield, Burford Durst, installation foremen; L. C. Haire, J. H. Ferguson, craftsmen; Wayne Workman, data foreman; H. G. Binnicker, data installer.

I think this entire program has been an outstanding example of a cooperative development/installation effort by the Bell System Operating Company and a

corporate customer. The resulting installation certainly stands as a show place in the communications industry.

I would like to extend a personal invitation for you to visit our facility at your earliest convenience. In the meantime, I would appreciate your extending my thanks for a job well done to the above mentioned individuals.

Very truly yours,

C. M. HUNTLEY,
Director-Telecommunications.

Attachment I

CALL RESTRICTING SERVICES

PACIFIC TELEPHONE

PBX CODE RESTRICTION

A 3 digit code restrictor designed for use with large PBX Systems and has been available since 1968. The equipment is located on customer premises.

Functions

- Restricts or allows dial "1" access.
- Restricts or allows dial "O" access.
- Restricts or allows Outward WATS calls.
- Restricts or allows Special Services, 411, 611.
- Restricts or allows Dial access to distant.
- Restricts or allows NNX's within an NPA.

Rates	Installation	Monthly	BTC
Common equipment for 50 trunks.....	\$1,000	\$125	\$2,000
Each arranged for diversion.....	150	18	450

There are 924 installations in PT&T.

CENTREX TOLL DIVERSION

Restricts selected stations from dialing to distant numbering plan areas (NPA).

Rates	Installation	Rates
First 100 stations.....	\$440	\$70
Additional 50 (up to 300).....	215	35
Additional 50 (over 300).....	50	10.50

Code restriction, with call forwarding is available under contract. This feature is incorporated in the L.A. County Centrex services at the Civic Center and County/USC Medical Center.

MICHIGAN BELL

Two types of Diversion—Available since January 4, 1960.

Type I Associated with dial PBX

Two classes:

- a. Diverts all toll and interzone calls.
- b. Diverts toll only.

Equipment in Central Office—calls are diverted to tone, attendant or recorded announcement.

Rates:	Monthly
First 25 trunks.....	\$83.75
Each additional trunk.....	3.35

No non-recurring charge if installed at same time as PBX. If added at later date charges are \$10 per trunk, 3 year contract. If removed at prior date charge is 50% of unbilled portion.

333 systems in service.

Type II Centrex I & II

2 classes of service—similar to Type I.

Diverts to tone only.

Rates:

	<i>Monthly</i>
First 100 dial terminals.....	\$55. 80
Each additional 100 dial terminals.....	. 55

3 year contract. Discontinuance prior to term charges are 50% of unbilled portion.
37 customers.

A separate service is provided for school dormitories at no charge. Individual agreement is entered into with students to determine whether or not call restriction is required.

NEW YORK TELEPHONE

Toll Diversion

PBX—Toll diversion only. Equipment located in Central Office

	Monthly	Installation
Per trunk equipped.....	\$2. 34	None.
28201 Trunks diverted.....		
Centrex—Toll diversion:		
Per 100 stations.....	\$23. 48	None.
Tie lines each.....	. 36	

Code Restriction

Furnished under special assembly. Three digit code restriction provides for the following:

- Restricts or allows dial "1" access.
- Restricts or allows dial "0" access.
- Restricts or allows Outward WATS calls.
- Restricts or allows Special Services, 411, 611.
- Restricts or allows Dial access to distant.
- Restricts or allows NNX within an NPA.

SOUTHWESTERN BELL

Toll Diversion

\$6.40 per truck/per month—PBX (Feature Priced) Special Charge Request—Packaged PBX (usually \$6.40 where available) (500 customers equipped)

Code Restriction

Available only with 101 ESS (140 systems in Service \$50 per month, per station equipment

Automatic Rate Advance

Order of magnitude rates have been quoted available only with #1 ESS offices equipped with proper generic program. Call restriction available under this option.

SOUTHERN BELL

Toll Diversion

PBX

PBX	Monthly	Installation
Per Trunk.....	\$5. 50	(¹)
In service 11,909 in Southern Bell.....		
PBX 770 (obsolete):		
Per 6 Trunks.....	5. 80	(¹)

¹ No installation charge if installed coincident with PBX.

PBX 770	Two tier	Monthly—fall 1973
Plan 1 toll restriction.....		\$6.40 6 trunks.
Plan 2 toll restriction.....		\$7.95 8 trunks.

Code Restriction

\$2.20 per system + traffic sensitive rates.

None in service

Centrex

Toll Diversion

Monthly

Per 15 Stations.....	\$9. 00
3,389 in service.....	

Key Telephone

1A2 modification—Toll Diversion

7.50/month per line equipped ¹

Rotary Dial Only—None in operation—Tel-Tronics Manufacturer.

ATTACHMENT J.—CALL RESTRICTION AT LOS ANGELES COUNTY LOCATIONS

	Date installed	Foreign exchange
Compton.....	June 1968.....	Yes
Do.....	Oct. 14, 1969.....	Yes.
Van Nuys.....	Nov. 20, 1969.....	Yes
Receda.....	Dec. 19, 1969.....	Yes.
Compton.....	Apr. 4, 1970.....	Yes.
Montebello.....	May 4, 1970.....	Yes.
Van Nuys.....	June 15, 1970.....	Yes.
Grand Avenue.....	July 13, 1970.....	No
Howthorne.....	July 20, 1970.....	Yes
Glendale.....	Aug. 8, 1970.....	Yes
El Monte.....	Aug. 17, 1970.....	Yes
Compton.....	Jan. 14, 1971.....	Yes
Alhambra.....	Jan. 28, 1971.....	Yes
El Monte.....	June 21, 1971.....	Yes
Martin Luther King Hospital.....	Oct. 1, 1971.....	Yes
Englewood.....	Jan. 17, 1972.....	Yes

¹ No installation charge if installed at same time as KTS.

Attachment K

VOICE CONNECTING ARRANGEMENTS

USOC:

Description

- RC1----- For customer provided call duration timing or usage duration limiting equipment to telephone company facilities/ includes tone transmission audible only to connecting arrangement user/for terminal in station equipment, PBX systems or manual termination in Centrex attendant positions.
- RC2----- Including tone transmitter audible only to user, that enables the connection of CPE call duration timing or usage duration limiting equipment to telephone company facilities—for Centrex trunk termination, termination of WATS access lines and for dial access, where facilities and operating conditions permit, per line equipped.
- DCW----- Interface trunk circuit provides trunk level access on a Bell System PBX to a customer-provided radio paging system.
- HZM----- Used to connect customer-provided traffic measuring equipment to detect on-hook, off-hook, dial pulse, touch-tone and ringing signals to a private line terminating in telephone company provided equipment.
- QKT----- Manual—for the connection of customer provided voice transmitting and/or receiving equipment or communications systems to an exchange line through a Bell provided station.
- CIV----- Permits the connection of customer-provided line use counting and timing equipment to an exchange trunk line, PBX or Centrex C.U. station line, Key telephone system line or Central Office Station line terminating in telephone company provided dial pulse equipment.
- RCX----- Permits the connecting of customer-provided equipment that facilitates the identification of called numbers to an exchange trunk line, Key telephone station of Central Office station line terminating in telephone company provided equipment.
- DCT----- Recorded telephone dictation trunk which provides trunk level access on a Bell System PBX or Centrex system to customer-provided dictation equipment.
- CDX----- To connect customer-provided equipment which enables the manual connection of an incoming call to a specific outgoing line from a Bell System on or two cord switchboard.
- VCP24----- Provides for connection of a customer-provided d.c. power source to supply power to telephone company provided voice connecting arrangements/where 24-volt power is required.
- VCP48 ----- Provides for connection of a customer-provided d.c. power source to supply power to telephone company provided voice connecting arrangement/where 48-volt power is required.
- C1Y ----- Provides means to connect a customer-provided computer to traffic registers of Bell FADS system which is used with an automatic call distributor system.
- CEK ----- To permit the connection of customer-provided message equipment to the exchange facilities of the telephone company—provides indications of message registration for outgoing calls placed.

RTS -----	Recorder connector—modified to provide two-way tone duration and pulse rate to accommodate COAM call duration timer/Centrex.
CDQ++ (CDQ2W) (CDQ2X) (CDQ4W) (CDQ4X).	Automatic—arranged for two-way service to provide interface to customer-provided dial switching equipment—used with telephone company provided private line with telecommunications network access and telephone company provided signaling.
C232W -----	Automatic—arranged for two-way service to provide a two-wire interface to customer-provided equipment.
C234W -----	Automatic—arranged for two-way service to provide a four-wire interface to customer-provided equipment.
C2K -----	Automatic—for two-way tie trunk-type service providing a two-wire interface to a customer-provided two-wire channel using customer-provided channel signaling—associated with telephone company Centrex.
C2H -----	Provides for termination of customer-provided tie lines, with customer-provided channel signaling, in Bell PBX or Centrex termination.
C2A -----	Automatic—to connect customer-provided voice transmitting and/or receiving terminal equipment to an exchange line or PBX/CTX extension line.
C2AKS -----	Automatic—to connect customer-provided voice transmitting and/or receiving terminal equipment bridged to an exchange line, foreign exchange line or WATS access line terminated on a Bell System station—per line equipped.
C2ACP -----	Automatic—to connect customer-provided voice transmitting and/or receiving terminal equipment to an exchange line, foreign line, or WATS access line—per line equipped.
CED -----	Automatic—to permit the connection of a customer-provided and maintained system to a telephone company special recording trunk—per arrangement provided in connection with two-way service.
CET -----	Voice connecting arrangement—automatic—to permit the connection of a customer-provided and maintained system to a telephone company special recording trunk—per arrangement provided in connection with outward service.
C24 -----	Provides for termination of customer-provided tie lines, with customer-provided channel signaling, in Bell PBX or Centrex systems—per PBX termination.
C27 -----	Automatic—arranged for two-way service to provide a two-wire interface to telephone company provided dial switching equipment—used with COAM 2-wire channel and COAM channel signaling.
C22 -----	Automatic—for connection of a customer-provided PBX to exchange and long distance measured services to accommodate direct inward dialing.
C25 -----	Automatic—for connection of a customer-provided PBX for access to Bell System automatic message accounting equipment to accommodate customer-provided automatic identified—outward dialing.
CD6 -----	Automatic—to connect exchange trunk arranged for one-way incoming service to attendant position of COAM system.

CD7	Automatic—to connect exchange trunk arranged for one-way outgoing service from attendant position of COAM system.
CD8	Automatic—to connect exchange trunk arranged for one-way outgoing service from dial switching equipment of COAM system.
CDH	Automatic—to connect exchange trunk arranged for two-way combination service—to and from attendant position and from dial switching equipment of COAM system.
CD9	Automatic—to connect exchange trunk arranged for two-way service to and from attendant position of COAM system.
STP	Automatic—for two-way exchange station line services which provides a two-wire interface to a customer-provided station or key telephone system.
CTD	For termination of customer provided call diverting equipment in Bell PBX or Centrex C.U. systems
KTX	For connecting of customer-provided call restricting equipment to Bell System key telephone systems.
CDA	Manual—To connect cord switchboard of COAM system with supervisory signals to exchange trunk.
CD1	Manual—to connect cord switchboard of COAM system without supervisory signals to exchange trunk.
CDN	Manual—to connect line from COAM system with supervisory signals to exchange line through telephone company provided key telephone.
CDB	Manual—to connect line from COAM system with supervisory signals to exchange trunk through telephone company provided cord switchboard.
CD5	Manual—to connect line from COAM system without supervisory signals to exchange line through telephone company provided key telephone.
CD4	Manual—to connect line from COAM system without supervisory signals to exchange trunk through telephone company provided cord switchboard.
CEBBX	Manual—to permit customer to connect and disconnect COAM equipment to a specific line terminated on telephone company key set.
CEBAX	Manual—to permit customer to connect and disconnect COAM equipment to a specific line terminated on telephone company key set.
CEBAV	Manual—which permits customer to connect and disconnect COAM equipment which answers an incoming call, to a specific line terminated on a telephone company key set.
DCK	Provides Trunk level access from a station on Bell System PBX or Centrex system to CPE, capable of receiving dialed digits, rotary or touch-tone, for control purposes.
LDH	Permits connection of COAM background music or other recorded material to central office lines terminated in telephone company provided switchboard.
LVH	Permits connection of COAM background music or other recorded material to company or PBX lines, terminated in telephone company key sets, while in hold mode.
CEBAW	Permits the customer to manually connect and automatically disconnect COAM equipment to a specific line terminated on a telephone company key set/associated station/a line from COAM system in telephone company provided key telephone.

STS -----	Provides for the connection of customer-provided supervisory tone sending and receiving equipment—per line equipped.
STC -----	Provides for automatic connection of customer-provided terminal equipment—per line equipped.
CEZ -----	Provides for manual connection and automatic disconnection of customer-provided conferencing equipment to a specific line on a key telephone set/disconnect signal only when supplied from serving company/per line arranged.
CDY -----	Terminates/without exchange connection/a line from COAM system in telephone company provided key telephone.
RDY -----	Provides for connection of customer-provided answer-only terminal equipment—per line equipped—where an automatic volume limited receive signal is required.
RDMZR -----	Provides for connection of customer-provided answer-only terminal equipment—per line equipped where two-way transmission is required.
SU7QW -----	Provides for the connection of customer-provided dial pulse dialers—per line equipped.
SU6AQ -----	Provides for connection of customer-provided originate only or originate and answer terminal equipment—per line equipped.
CAU -----	Alarm coupler—80 unit.
SU3 -----	Alarm coupler—signaling unit—tone detector to operate COAM device.
SU4 -----	Alarm coupler—combined signaling and control unit.
SU6 -----	Alarm coupler—modified to provide two-way transmission—will permit detection of dial tone or proper signal from remote control.
SU7 -----	Alarm coupler—modified for use with repertory dialers which require no transmission path.
RCT -----	Recorder connector.
RCZ -----	For connection of attended customer-provided recording equipment to telephone company facilities, with automatic recorder tone device.
RTT -----	For connection of customer-provided call duration timer to a WATS access line at a customer's premises/includes two-way tone transmitter.
RDL -----	Recorder coupler—one-way transmission.
RDM -----	Recorder coupler—modified to provide two-way simultaneous transmission.
CDT -----	Data access arrangement for connection of customer-provided data transmitting and receiving equipment to telephone company private line with telecommunications network access—manual.
CBT -----	Arrangement for unattended sending and receiving through a contact closure type interface.
CBS -----	Arrangement for unattended sending and receiving through a voltage type interface and/or for use with telephone company or customer-provided automatic calling units.
CBV -----	Power supply for CBT.

Attachment L
AFFIDAVIT

Now comes Thomas J. Klinedinst and says as follows :

I am President of Thomas E. Wood Inc., Cincinnati, Ohio and I am the "Tom Klinedinst" referred to in a letter dated July 3, 1973 from John W. Angus of Thomas E. Wood Inc. to David T. Carter, Litten Business Telephone Systems, 11709 Chesterdale Road, Cincinnati, Ohio 45206.

I categorically deny all of the statements attributed to me in the above-described letter and state that none of the representations made in such letter with respect to conversations with officials of Cincinnati Bell Inc. are true.

At no time have I had any conversation or communication with any officer, official, or representative of Cincinnati Bell Inc. which in any way would indicate, or could be construed to imply, any relationship whatsoever between insurance business written by Thomas E. Wood Inc. for Cincinnati Bell Inc. and the use by Thomas E. Wood Inc. of telecommunications equipment and services provided by Cincinnati Bell Inc. or any of its competitors.

John W. Angus was, and is, engaged solely in the business of selling and serving insurance for Thomas E. Wood Inc. and at no time was he authorized to write the above-described letter or to make the statements contained therein.

This Affidavit is given by me freely in order to clarify the record on behalf of Thomas E. Wood Inc.

Further Affiant sayeth not.

THOMAS J. KLINEDINST.

STATE OF OHIO, }
COUNTY OF HAMILTON, } ss:

Sworn to and subscribed in my presence this 28th day of June, 1974.

JOHN K. ROSE,
Attorney at Law,
Notary Public, State of Ohio.

My commission has no expiration date, Section 147.03 R. C.

ATTACHMENT M.—ALLEGATIONS STATED AND PLACED IN THE RECORD BY WITNESSES

Submitted by	Customer name, location, and operating telephone company	Allegation	Response
Knox International Tours.	Knox International Tours, Houston, Tex.; Bell of Pennsylvania.	Bell of Pennsylvania supervisor told Knox Tours that when a Holiday Inn Hotel in Pennsylvania bought a competitive system that Bell of Pennsylvania moved a seminar to another hotel.	Bell of Pennsylvania knows of no case where they have moved a seminar out of a Holiday Inn because the Holiday Inn bought a competitive system and they deny allegation.
Thrun Chevrolet.	Thrun Chevrolet, Des Moines, Iowa; Northwestern Bell.	Northwestern Bell increased installation charges from \$510 to \$2,800 and monthly charges from \$635 to \$874 after the contract had been signed.	Iowa Commission allowed filed tariffs to go into effect under bond which increased rates to all existing customers as well as all other customers who like Thrun had entered into an agreement for a new PBX system. The salesman was not aware of the impending rate increase at the time of the sale. Filing was 2 weeks later.
Truckweld Equipment Co.	Truckweld Equipment Co., Seattle, Wash.; Pacific Northwest Bell.	Arcata was forced to advise PNB that Truckweld was considering a competitive system when it asked PNB for information that was required to develop a proposal to the customer. Arcata was placed in an unfair competitive position.	Pacific Northwest Bell learned about competitive case from Mr. Massick's letter of agency dated Mar. 16, 1972 and presented a proposal on Mar. 22, 1972. Pacific Northwest Bell denies using its position unfairly to learn about competitive cases.
Do	do	Mr. Massick advises he never saw a Pacific Northwest Bell communications consultant until the competitive case and hasn't seen the consultant for 2 years since the new system was installed.	Pacific Northwest Bell advises they made 12 sales contacts with Truckweld in 1970, at least 1 in contact 1971, 9 contacts in 1972, 2 contacts in 1973.
Litton (exhibit B 1)	Pointe Dodge, Inc., Detroit, Mich.; Michigan Bell.	Customer sells trucks to Michigan Bell and believes that Bell would stop doing business if interconnected.	Customer has Bell System service. Michigan Bell is not aware of such an allegation.
Do	F.H. Construction, St. Claire Shores, Mich.; Michigan Bell.	Customer does work for Bell who would not give him work if he interconnects.	Michigan Bell denies allegation. There is no record of a competitive case.
Do	Silvers Inc., Detroit, Mich.; Michigan Bell.	Bell would not buy his office equipment if he interconnected.	Not a known competitive case—Michigan Bell does buy some equipment from customer. Michigan Bell denies allegation.
Do	Chamberlain Real Estate, Troy, Mich.; Michigan Bell.	Michigan Bell advised customer would stop doing business with Chamberlain if he interconnected.	Michigan Bell has no knowledge of anyone advising customer they would stop doing business with him if he interconnected and they deny allegation.
Litton (exhibit E 2)	Holzmacher, McClendon, and Murrell consulting engineers; New York Telephone Co.	New York Telephone installer explained to customer about all the problems they were letting themselves in for by switching to a private system.	New York Telephone advises they are not aware that an installer disparaged a competitor's equipment. New York Telephone's policy is not to disparage.
Do	Holzmacher, McClendon, and Murrell, consulting engineers, New York Telephone Co.	During takeover to Litton system the New York Telephone installer went from room to room yanking out phones as fast as he could in the hope he would cut the phone company's system before Litton system was ready.	New York Telephone denies allegation and customer was not put out of service. New York Telephone did not attempt to put the customer out of service.

Litton (exhibit F 1) Snunoff Beverage and Import Co.,
Hartford, Conn.; Southern New Eng-
land Telephone Co.

Litton (exhibit G 3) Extra Truck Rental, Cleveland, Ohio;
Ohio Bell.

Do Shaker Ford, Cleveland, Ohio; Ohio Bell.

Do Commerce Ford, Cleveland, Ohio; Ohio
Bell.

Do Carpenter Printing, Cleveland, Ohio;
Ohio Bell.

Litton (exhibit 8 A) General Pacific Telephone & Telegraph
Co.

Do do

Customer sent letter declaring Litton agent and advising that
Litton will contact Bell for Connecting Arrangements (Mar. 6,
1973). Southern New England Telephone replied with 20 ques-
tion type letter asking for opportunity to complete (Mar. 9, 1973).

Customer advised Litton they could not buy their system because
Ohio Bell had advised them that Ohio Bell would not lease
anyone of their trucks. Litton agreed and destroyed the
contract.

Litton advises that since Shaker Ford bought a Litcom system in
September 1973 that they have lost Ohio Bell's maintenance
contract and are not invited to bid on Ohio Bell's vehicles.

Litton advises that since Commerce Ford bought a Litcom system
in November 1973 that they have lost Ohio Bell's maintenance
contract and are not invited to bid on Ohio Bell's vehicles.

Carpenter Printing advises they will not consider buying a Litcom
system because they fear the loss of a major portion of their
business with Ohio Bell.

Alleges Pacific Telephone tariffs STC for use with customer Key
Telephone Systems and SU6 for use with customer provided
alarm couplers and that modifications of above called STC List
I and SU6 AQ are same in design. Pacific Telephone & Tele-
graph actually installs SU6AQ for use with customers provided
Key Systems while charging for higher rated and more com-
plicated STC.

No technical basis for requirement of connecting arrangement.
A connecting arrangement interferes with proper operation.
The connecting arrangement is unnecessarily large, bulky and
unsightly. Rates and charges for connecting arrangements are
unreasonable.

Southern New England Telephone denies the allegation. Southern
New England Telephone received customer letter dated Mar. 6,
1973 and called customer to verify intent of letter and to deter-
mine if a contract had been signed. Customer acknowledged that
no contract was signed and Southern New England Telephone
sent letter dated Mar. 9, 1973 to customer acknowledging cus-
tomer's intent to discuss telephone matters with Southern New
England Telephone. Customer sent letter dated May 18, 1973 to
Southern New England Telephone stating intent to buy from
Litton and appreciation for Southern New England Telephone's
fine service.

Ohio Bell denies allegation. Did not advise customer as alleged.

Ohio Bell had purchased parts from Shaker Ford prior to September
1973 amounting to \$2.79 in February 1973; \$2.63, in June 1973;
and \$2.28 in September 1973. However Shaker Ford has not had
a maintenance contract with Ohio Bell. In addition Ohio Bell
since September 1973 has done business with Shaker Ford
including ordering a pick up truck October 1973.

Ohio Bell continues to ask Commerce Ford to bid on vehicles and
has received four bids from Commerce Ford during the past 18
months. Ohio Bell has not had a maintenance contract with
Commerce Ford.

Ohio Bell denies the allegation. Carpenter does not print white and
yellow paas but currently has street address directory contract.
Carpenter was successful bidder on contract handled by Western.
B-11 denies allegation.

The SU6 is not the same as the SU6AQ and does not perform the
functions that Litton believes it should perform thus necessitating
the use of the SU6AQ. This is a pending case before the Public
Utilities Commission of California No. 9613.

This is a pending case before The Public Utilities Commission No.
9610. See statement Page 50 regarding need for connecting
arrangements.

Attachment N

EAST GRAND RAPIDS, MICH., *January 28, 1971.*

Mr. G. J. FLAHERTY,

Division Sales Manager—Southern Michigan Bell Telephone Co., Keeler Building, Grand Rapids, Mich.

DEAR MR. FLAHERTY: This past January 18, 1971, I was fortunate in receiving the opportunity to perform in a new and challenging assignment which I readily accepted. It typified the beneficial experiences I've had since joining Michigan Bell Telephone Company in July 1966.

It has been my pleasure, beginning with initial sales training class, to work under the supervision of highly qualified and competent people who have barred no hold to contribute to and assist in my progress in the business and development as an individual. By the same token, I feel I have given my best to these individuals and the company, as shown by the "superior" ratings received as a trainee, Sales Representative, Staff Supervisor, and Sales Manager. Obviously, these mutual respects still exist as demonstrated by my recent assignment to the highly responsible position and the vigor with which I accepted the challenge.

Therefore, it is with some regret that I inform you of my decision to seek a new and greater challenge in my career. Motivation for this decision was provided only by my long range goal of self-employment. In short, I feel my new employment as the General Sales Manager of Telephone Power, Inc. will further my training and enable me to meet my long range goal, sooner than if I remained in your employ.

As such, my last working day will be March 12, 1971, of which ten working days would be vacation allowance.

Respectfully yours,

RONALD B. FOX.

Attachment O-1

MICHIGAN BELL CONTRIBUTIONS TO THE MICHIGAN COLLEGES FOUNDATION

Year:	Amount
1955 through 1960.....each year.....	\$5,000
1961.....	6,000
1962.....	7,500
1963.....	7,500
1964.....	7,500
1965.....	7,500
1966.....	8,000
1967.....	8,000
1968.....	8,000
1969.....	8,800
1970.....	9,000
1971.....	9,000
1972.....	9,000
1973.....	10,000
1974.....	11,000

MICHIGAN BELL TELEPHONE COMPANY SPECIAL BUILDING FUND CONTRIBUTIONS TO MICHIGAN COLLEGES FOUNDATION SINCE 1955

College	Year	Total	College	Year	Total
Albion College.....	1965-66	\$9,000	Hope.....	1961	\$1,000
	1967-68	10,000		1968-72	10,000
Andrews University.....	1970-72	7,500		1973-74	12,000
Aquinas.....	1959	2,500	Kalamazoo.....	1958-60	10,000
	1967-69	14,000		1965-66	20,000
Calvin.....	1961	2,500		1969-70	10,000
	1964	1,500	Nazareth.....	1965	1,000
	1968-70	5,000		1972-74	12,000
Hillsdale.....	1966-68	9,000	Olivet.....	1963	1,000

Attachment O-2

To Whom It May Concern: I, Donald H. Korten, Executive Director of the Y Center of Battle Creek, make the following statement of fact:

1. Michigan Bell Telephone Co., made a pledge of \$10,000 to the Y Center Building Fund signed February 18, 1972.

2. Payments of this pledge have been received by the Y Center as follows:

\$4,000 received and deposited May 12, 1972.

\$3,000 received and deposited May 11, 1973.

\$3,000 received and deposited May 9, 1974.

3. On or about February 27, 1973 the Y Center contracted to purchase telephone equipment from TPI, Inc.

DONALD H. KORTEN,
*Executive Director,
Y Center of Battle Creek.*

Subscribed and sworn to before me this 26 day of June A.D., 1974 Notary Public, Jeannette A. Buck, Calhoun County, Michigan. My commission expires Jan. 12, 1976.

Attachment P

[From the Detroit Free Press, June 26, 1974]

BELL DENIES CHARGES OF DIRTY TRICKS

(By Fred Girard)

* * * * *

Fox accused Michigan Bell of, among other things:

Mounting a massive advertising campaign, paid for with customers' money, against sellers of private equipment.

Using half-truths in describing the bad points of interconnect companies to potential customers.

Having salesmen question the financial strength of interconnect companies by supplying a Dun and Bradstreet report, then supplementing the report with rumors.

Threatening non-profit organizations such as colleges and charities with the discontinuance of grants if they used private equipment.

Roughly the first third of Fox's testimony was taken up with the case of Calvin College in Grand Rapids. Fox claimed that Michigan Bell stalled his attempts to sell a telephone system to the college for 4½ years by its use of unethical tactics.

Fox claimed Bell induced the college by offering a telephone system at less than the normal tariff rates; refused to sell Bell facilities for less than 700 percent of their actual cost; and finally threatened the college with the withholding or withdrawing of grants.

Henry DeWitt, vice-president for finance and business of the college, told the Free Press he had no knowledge of any of the tactics alluded to by Fox.

"As far as that threat of withdrawing a grant is concerned," DeWitt said, "all I can remember is that one of the telephone company representatives did mention that Michigan Bell was a regular contributor to colleges around the state, but if they lost a lot of revenue to these private companies those contributions might have to be reduced or discontinued."

Ironically, at exactly the same time Fox was testifying in Washington Tuesday, Michigan Bell President David K. Easlick was holding a press conference in Detroit to announce that the company was beginning a severe austerity program, including the immediate discontinuance of all charitable grants.

In a private interview after the press conference, however, Easlick denied any knowledge of any Fox's charges.

"All of these practices are totally against company policy and company procedure," Easlick said. "Fox appears to be using a shotgun approach to these charges in the hopes that one or more of them could be substantiated."

Easlick did promise, however, Easlick denied any investigation into all of Fox's charges.

The charge that was received with the greatest amount of incredulity by the

subcommittee was that Michigan Bell had demanded that the Battle Creek YMCA return part of a grant from the telephone company after the YMCA purchased equipment from Fox's company.

When Fox made the statment, Hart said incredulously, "That's the kind of thing you wouldn't even expect from a back alley skin flick company."

Representatives of the Battle Creek YMCA, however, told the Free Press Michigan Bell completed paying the grant.

The YMCA held a building fund drive in 1972, and Bell pledged \$10,000. According to YMCA director Don Korten, the company paid \$4,000 on May 12, 1972.

Before the second installment was due, however, the YMCA bought nearly \$11,000 worth of equipment from TPI. Michigan Bell still paid \$3,000 in May 1973, Korten said, and the final \$3,000 last May.

The president of the YMCA's board, Harold Sundburg, said he does recall one remark made to him about the grant at the time.

"I didn't interpret that as a threat, though. I thought it was merely conjecture on his part."

Bleech told the Free Press he never made any such comment.

"I don't make the decisions on contributions anyway," Bleech said. "I would never have any grounds for making such a statement."

Another serious charge made by Fox was that Bell threatened to withdraw construction contracts from Van Ess Construction Co. of Grand Rapids if Van Ess purchased equipment from TPI.

Fox said that in order to keep VanEss out of the middle of a lawsuit, TPI released Van Ess from its contract.

Attachment Q

VAN ESS Co.

COMSTOCK PARK, MICH., June 26, 1974.

TO WHOM IT MAY CONCERN: The reason for cancelling my contract with TPI Systems was solely my own decision. It was based on observations and some conjecture on my part of current and future possible maintenance problems.

In no way was I intimidated, coerced or threatened the loss of contracts from Michigan Bell Telephone Company by their representatives.

RUSSELL KNIFF,

Treasurer.

Adele L. Viilo, notary public, Kent County, Mich., my commission expires Oct. 9, 1977.

Attachment R

AFFIDAVIT

I, Leonard L. Westdale, President of Westdale Company, Grand Rapids, Michigan, ave read to transcript of testimony concerning Westdale Realty Company given by Ronald B. Fox before the Senate Sub-Committee on Anti-Trust and Monopoly. I find this testimony erroneous and misleading with respect to the following:

1. There never was a firm contract between Westdale Realty Company and TPI. This was a contingent agreement signed at their request for "income tax benefits" if signed prior to the end of the year. I signed this contingent agreement and gave them a deposit of \$3,000.00 but only upon receiving a letter from them indicating on what conditions the contract would be operative. These conditions were never met so the agreement never became effective.

2. Because of the conflicting statements and claims of the two competitive inter-connect companies, I decided on February 15, 1973 to make a formal request for the Bell System to quote us on the installation of equipment similar to the proposed equipment from the inter-connect companies.

3. The testimony at least implies that Michigan Bell interfered with the negotiation process of TPI and our company and I wish to clarify that Michigan Bell's entry into the negotiations was solely at our request because of the horrendous amount of technical and confusing claims between the two inter-connect companies. Incidentally, we have since signed a contract with Custom

Telephone Communications Co., a local inter-connect company, and the Bell Telephone Co. in no way interfered with these negotiations and has been 100% cooperative in the changeover process.

4. Inasmuch as there was no firm contract with TPI, we requested our deposit to be returned and they have refused to do so on the basis of their having done a lot of work to make the proposal, but this work was never requested by the Westdale Company and we were not even knowledgeable that they had completed this study until they had made the proposal. It appears they wish to charge us for making their quotation and we will have to file suit in a court of law to obtain a refund of our deposit, which we plan to do shortly.

Dated: July 5, 1974.

LEONARD L. WESTDALE, *President.*

Subscribed and sworn to before me, this 5th day of July, 1974, County of Kent, State of Michigan. My commission expires August 15, 1975.

WALTER A. BYRON,
Notary Public.

Attachment S

ORSON E. COE PONTIAC, INC.,
Grand Rapids, Mich., July 1, 1974.

Mr. ROBERT THOLE,
*Michigan Bell Telephone,
Grand Rapids, Mich.*

DEAR MR. THOLE: A news item on the front page of the Grand Rapids Press was brought to my attention by our General Manager, Richard LeValley, stating that Michigan Bell employees were urged to boycott Orson E. Coe Pontiac for purchasing our own telephone system from T.P.I.

In the many conversations that I have had with both you and your Sales Manager, Dan Mink, during our negotiations there was never any pressure exerted whatsoever by anyone from Michigan Bell to purchase or lease equipment from Michigan Bell instead of T.P.I.

I have had many loyal customers for a good number of years who were employed by Michigan Bell and have sold my bel employees since the purchase of T.P.I. equipment and without criticism and without even a reference to the equipment that we purchased.

I can not understand how such a false article could be on the front page of the Grand Rapids Press.

I hope that our relations will continue to be as satisfactory with Michigan Bell employees as has been in past years. In fact, I personally have sold a new Pontiac Catalina to the Michigan Bell salesman since I purchased T.P.I. equipment.

Respectfully yours,

ORSON E. COE,
President.

Attachment T

MICHIGAN BELL EXHIBIT 45

AFFIDAVIT

STATE OF MICHIGAN,
County of Wayne, ss:

NOW COMES, William E. Ebben, who being duly sworn, deposes and says:

1. That he is Vice-President—Operations Staff and Engineering of Michigan Bell Telephone Company;
2. That he has read the Statement of Ronald B. Fox to the United States Senate Committee on the Judiciary, Sub-Committee on Antitrust and Monopoly, and the Exhibits attached to said Statement;
3. That he has read the Response of Michigan Bell Telephone Company and the Exhibits attached thereto;
4. That he has discussed the statements of fact contained in the Response of Michigan Bell Telephone Company with the employees of Michigan Bell Telephone Company responsible therefor and is satisfied that said statements of fact are true as set forth therein; and

5. That he has examined the Exhibits attached to the Response of Michigan Bell Telephone Company and is satisfied that said Exhibits are true and accurate.

Further, deponent sayeth not.

WILLIAM E. Ebben.

Subscribed and sworn to before me this 23rd day of July, 1974.

NOEMI NORIEGA.

Notary Public.

My Commission expires January 29, 1977.

Attachment T

RESPONSE OF MICHIGAN BELL TELEPHONE COMPANY

Mr. Ronald B. Fox on June 25, 1974, gave testimony before and submitted a statement to the Committee on the Judiciary, Subcommittee on Antitrust and Monopoly. In this statement and testimony Mr. Fox made a number of charges and claims that, if not completely false, are inaccurate and misleading.

In response to these claims, as set forth in the statement, Michigan Bell Telephone Company respectfully submits the following:

I. THE CALVIN COLLEGE CASE

Page 3¹

(1) "A typical competitive case is that of Calvin College. . ."

This case is "typical" only of Mr. Fox's ability to misquote and take out of context his own exhibits. It was a particularly lengthy and unusual situation, complicated by the fact that TPI originally represented Calvin College as an independent communications consultant (Exhibit 1)² and during the course of negotiations became a distributor of the Stromberg-Carlson line. (Michigan Bell Exhibit 1).²

(2) "On numerous occasions prior to this, the College had requested Michigan Bell to provide Centrex service but their request had been continually rejected because the level of return to Michigan Bell was inadequate."

Centrex is a tariff offering and Michigan Bell may not and does not "reject" a request for such service if it has facilities available. As a matter of practice (instituted long before competition existed), where it was necessary to modify the Central Office in order to provide Centrex, Michigan Bell would examine the cost to modify the office and if the customer was not large enough to provide sufficient revenue to cover those costs, Michigan Bell would try to discourage the customer from ordering Centrex. However, since Centrex was a tariff offering, Michigan Bell would provide it if the customer needs and desires could not be met by another service offering.

Page 4

(1) "2-19-69 Calvin College requested Michigan Bell to provide the date that Bell Centrex I Co service could be provided for them and then interconnected Centrex Service would be available. (Exhibit 2.)"

Exhibit 2 asks for the date of Centrex availability and "that of interconnection possibility." There is no reference to "interconnected Centrex Service."

(2) "1-26-70 Michigan Bell replied to Calvin College that . . . Centrex interconnect was not yet approved by the Michigan Public Service Commission. (Exhibit 3.)"

Exhibit 3 states on Page 2 that "In December 1968 Michigan Bell submitted a request to the Michigan Public Service Commission to allow interconnection of customer-owned and maintained equipment to our facilities. As of this date the M.P.S.C. has not yet approved our request." Exhibit 3 makes no reference to "Centrex Interconnect."

(3) "2-6-70 Our company requested the Michigan Public Service Commission to provide the status of interconnection tariffs as related to Calvin College and other firms. (Exhibit 4.)"

¹ Page references are to Mr. Fox's statement.

² Exhibits attached to Mr. Fox's statement which are referred to herein are identified as he identified them. Michigan Bell Telephone Company Exhibits attached hereto and referred to herein are identified as "Michigan Bell Exhibit ____".

Exhibit 4 makes no reference to Centrex interconnect. If Centrex was what they were asking about, they could have easily so stated in this letter.

(4) "3-20-70 Our company requested Michigan Bell to provide the answer on our Centrex interconnection request and the availability of toll terminal service for student long distance calling."

Michigan Bell has no record of a request for Centrex interconnect dated 3-20-70, and Mr. Fox does not supply an exhibit confirming such a request.

(5) "3-24-70 Michigan Bell replied to Calvin College that the Michigan Public Service Commission had approved the interconnect tariffs on March 9, 1970 and that they could review these tariffs in the Michigan Bell public office. This statement was made knowing full well that Centrex interconnection had not been approved, nor filed for. (Exhibit 6.)"

Exhibit 6 does read as stated. However, Mr. Fox neglected to state that they had not yet asked for Centrex interconnection, and failed to produce any document which would support the inference that they had done so.

Page 5

(1) "6-1-70 Michigan Bell stated to our company that they would in fact provide toll terminals for student long distance calling. However, they reserved the right to decide whether or not such service could be provided on a non-billed basis as done for other users. They stated their determination would be based on the volume of usage, for which no history existed. (Exhibit 8.)"

The words as "done for other users" are not in Exhibit 8. Historically, this service has been provided only at hotels to permit them to obtain time and charges for their billing purposes. The attached Tariff Explanatory Notes issued in 1966 confirm this. (Michigan Bell Exhibit 2) Tariff provisions effective February, 1973 restrict provision of non-billed Toll Terminals to hotels and hospitals, providing that certain usage criteria are met. (Michigan Bell Exhibit 3)

Similarly, the words "for which no history existed" are found nowhere in Exhibit 8, which simply states that Michigan Bell reserves the right to decide whether or not such service can be provided on a non-billed basis and that the determination must consider the volume of usage expected.

(2) "7-2-70 The General Marketing Manager of Michigan Bell wrote the Vice President of Operations of Michigan Bell regarding Centrex service for Calvin College. . . . It was further stated that the rate of return for the system would be far below their required level. He went on to state that Calvin had specifically requested the charges and installation interval for privately owned Centrex and stated that if Bell would not provide Centrex service, that Calvin would definitely explore the use of a privately owned Centrex system. . . . (Exhibit 9.)"

The actual statements in Exhibit 9 were "the rate of return as the system grows will be about 5 percent which we recognize is below our desired level." and "the customer has specifically requested charges and the installation interval for Centrex I CO, and has stated that if we will not provide this service he has definite plans to explore the use of a privately-owned system." This letter spoke of the return being below that "desired." The words "far below" and "required" were added by Mr. Fox. Also, the charges requested were for the Michigan Bell system, not a "privately owned system" and there is no reference to a privately-owned Centrex system. Mr. Fox has taken a good deal of liberty in his quotations.

Page 6

(1) "7-10-70 Michigan Bell advised Calvin College that they would in fact provide Centrex I CO service with a target date of August, 1972. They did not, however, respond to the customer's request relating to interconnect rates for Centrex service. (Exhibit 11.)"

At this point in time no request had been made to Michigan Bell for "interconnect rates for Centrex service," and Mr. Fox offered not one exhibit which supports his claim that such a request had been made.

Further, the first written request by TPI to Michigan Bell for Centrex interconnect rates for Calvin College that has been located in Michigan Bell files is dated September 21, 1972, over two years later. In a letter of that date TPI reiterated that the telephone company had been notified on June 19, 1972 that the college had formally agreed to interconnect, and advised that the intercon-

nect equipment a Stromberg-Carlson electronic switching unit, is a Centrex vehicle. The 1972 letter then stated:

"Now that the college is in the process of interconnection, they want to request that the telephone company provide Centrex interconnect rates for their consideration."

"Would you please plan your response so that we may have it no later than October 30, 1972. This will enable the college in making a valid decision regarding PBX service or Centrex service." (Michigan Bell Exhibit 4).

(2) "8-17-70 Michigan Bell Telephone Company wrote our company advising us that they had forwarded our request to higher management for availability of Centrex interconnect. . . (Exhibit 13.)"

Exhibit 13 states: "3. D. I. D. availability, We have forwarded your requests to higher management for their advisement, but in any event we will require further details in each case before even an approximate interval can be determined. . . ." Centrex is a system whereby Direct Inward Dialing (DID) and Automatic Identification Outward Dialing (AIOD) features are provided together. As of August, 1970, TPI had not requested Centrex interconnect, but had asked about the availability of DID. Further, this request was not necessarily in regard to Calvin College as the letter indicates that there may have been several accounts involved.

Page 7

(1) "8-25-70 Our company wrote Michigan Bell stating . . . that we would be pleased to discuss our Centrex interconnect request with any of their representatives and had not been contacted as of that date. (Exhibit 14.)"

Exhibit 14 does not mention "Centrex interconnect". It says "Regarding the D.I.D. request, I should be pleased to discuss the requirements you indicate. However, I have not heard from any of your representatives yet."

Further, in the paragraph in the letter of 8-17-70 (Exhibit 13) regarding DID availability, to which Exhibit 14 apparently is a response, Michigan Bell had advised that, "in any event Michigan Bell would require further details in writing in each case before even an approximate interval can be determined, i.e., how many lines would be required, initially, 2 years after and 5 years after changeover." Thus, the burden would seem to have been on TPI to contact Michigan Bell, not vice versa.

(2) "9-8-70 Michigan Bell wrote our company stating that they felt the time table for Centrex interconnect would be mid-1971. They still did not provide rates. (Exhibit 15.)"

Exhibit 15 shows that TPI's request was not for Centrex interconnect or rates therefor, but was for DID time-table information, and that Michigan Bell didn't say that DID would be available in mid-1971. In Exhibit 15 Michigan Bell said,

"With regard to your request for D.I.D. time-table information, it is not expected that this service will be available on an interconnected basis before mid-1971."

Further, the next paragraph of this letter said:

"If you should wish to provide further information on the accounts you previously referred to, we will be happy to coordinate this for you, since the time requirements and study efforts to make determinations by Central Office are considerable, we cannot initiate any activity until fairly precise forecasts are given in writing."

(3) "9-30-70 Our company wrote to the Michigan Bell General Marketing Manager requesting his assistance in obtaining Centrex interconnect rates. (Exhibit 16.)"

There is not one sentence in Exhibit 16 which refers to Centrex interconnect rates. Indeed, there is no reference to Centrex availability or even DID availability.

(4) "10-26-70 Michigan Bell wrote our company stating once again that they felt Centrex interconnect would be available by mid-1971 and identified out dialing by late 1971 . . . (Exhibit 17.)"

There is no reference to "Centrex interconnect" in Exhibit 17, and it refers only to "connecting devices and equipment." There is no statement that the service would be available. Michigan Bell's statement was:

"Direct Inward Dialing connecting devices are expected to be available by mid-1971. Equipment to provide Automatic Identification Outward Dialing is anticipated during the fourth quarter 1971."

This is the first letter regarding AIOD availability as well as DID. However, there was no reference to a request for rates.

(5) "10-26-70 . . . Further, they stated that they would provide toll terminals to customers utilizing private equipment where facility conditions permitted and it was in the public interest for the completion of long distance calls. (Exhibit 17.)"

The statement is correct as far as it goes. However, the heading to that paragraph in Exhibit 17 indicates that the statement specifically referred to provision of toll terminals to hotels or motels using private equipment and has no reference to a college.

Secondly, Mr. Fox omitted the first sentence which set forth Michigan Bell's policy that "the type of equipment utilized, Bell or private, would have no bearing on the provision of toll terminals."

(6) "12-14-70 Our company made a proposal to Calvin College for a privately owned Stromberg-Carlson Centrex system utilizing the AT&T suggested interface rates for Bell Operating Companies. (Exhibit 18.)"

While Michigan Bell cannot be certain what TPI intended in its proposal, it appears that the rates quoted were the standard trunk interface rate of \$6.75, which had been approved by the Michigan Public Service Commission. They would not necessarily be the rates for connecting arrangements for customer provided PBX service with Centrex type features. Even if they were, it is clear that they could only be for the interface device and not for all of the Central Office facilities and arrangements required in order to provide Centrex type service.

Furthermore, if these were rates which AT&T had suggested to Michigan Bell or any one of the other Bell Companies, certainly TPI had been given no authority to quote them.

Page 8

(1) "1-29-71 Michigan Bell made a proposal to Calvin College for Centrex I CO service outlining the many advantages of their system versus the Stromberg-Carlson privately owned Centrex. (Exhibit 20.)"

There is nothing in Exhibit 20 which outlines the advantages of Michigan Bell system versus the Stromberg-Carlson system. In fact, there is not a single word referring to Stromberg-Carlson or any other privately-owned PBX.

(2) "It was intimated to the Vice-President and Business Manager of Calvin College that selection of the private system would jeopardize any future grants from Michigan Bell."

The attached newspaper article states: "Henry DeWitt, the Vice President for finance and business of the college, told the Free Press that he had no knowledge of any of the tactics alluded to by Fox." (Michigan Bell Exhibit 5)

(3) "2-1-71 Michigan Bell went back to Calvin College with a Centrex monthly cost analysis showing the difference between Michigan Bell Centrex I and the Stromberg-Carlson privately owned Centrex utilizing interface rates that they felt they would ask for should they file a Centrex interconnect tariff. . . . (Exhibit 21.)"

Exhibit 21 is a monthly cost analysis of the Michigan Bell Centrex I and the Stromberg-Carlson privately-owned Centrex that was prepared by Michigan Bell in response to the request of Calvin College. It uses the same format TPI used in its proposal (Exhibit 18) because this was the way the college requested it that it be done.

Further, the statement that Michigan Bell utilized interface rates "that they felt they would ask for should they file a Centrex interconnect tariff" is totally inaccurate. Michigan Bell used an estimate based on a preliminary discussion with AT&T. There is no indication at all in Exhibit 21 or otherwise that Michigan Bell would ask for these rates should it file a tariff for the interconnection of customer-provided PBX systems with Centrex type features.

(4) "2-1-71 . . . Further, they advised Calvin College that if the college was in fact sold on the features of the Stromberg-Carlson system that they would buy such a system directly from Stromberg-Carlson and install it under the existing tariff rate. . . . (Exhibit 21.)"

Certainly, there is nothing in Exhibit 21, which Mr. Fox apparently cites as supporting this statement, or in any other Exhibit filed by him which indicates that Michigan Bell would buy the system directly from Stromberg-Carlson. However, it is possible that Michigan Bell could have indicated that it would investigate the possibility, because Michigan Bell does purchase from outside suppliers to fill customer needs when the circumstances warrant.

(5) "2-1-71 . . . As of this date, none of our requests for rate information on privately owned and interconnected Centrex service had been answered by Michigan Bell. (Exhibit 21.)"

At this point in time Michigan Bell still had not received a request for in-

terconnected Centrex rate information although it had received requests regarding availability. Exhibit 21 certainly does not support Mr. Fox's statement.

(6) "6-1-72 Our company wrote the Director of Public Utilities, Department of Commerce, State of Michigan, requesting a clarification on whether or not business trunk rates or residential trunk rates would apply to a college dormitory (sic) system, because Calvin College and another college for which we had proposed a system were advised by Michigan Bell that they would have to pay the higher business trunk rate. . . (Exhibit 22.)"

Exhibit 22, a letter to the head of the Public Utilities Section of the M.P.S.C. Staff, clearly indicates that the inquiry was made regarding the dormitory PBX rate at Ferris State College in Big Rapids, Michigan; Calvin College was not mentioned.

Further, at this point in time, it was Michigan Bell's position that trunks to all college dormitories were business trunks, because the college, and not the students, was the customer. Where the college had a regular PBX system or Centrex CU (PBX on the customer premises) such as Calvin, the tariff did not provide for student dormitory rates, although there were residential rates for student dormitory service for Centrex CO (provided from the Central Office).

As a result of this controversy, Michigan Bell subsequently agreed to apply residential trunk rates to college dormitories for all colleges with PBXs where the dormitory trunks were separated from the administrative trunks and to establish a Centrex CU dormitory rate. This policy became effective on October 9, 1972.

Page 9

(1) 6-2-72 Our Company again wrote the Director of Public Utilities, Department of Commerce, State of Michigan appealing to the Public Service Commission to intervene on our behalf with Michigan Bell to obtain trunk and interface rates for customer-owned Centrex systems, stating that without success, we had attempted many times since 1969 to obtain these costs. . . (Exhibit 23.)"

As stated earlier, Michigan Bell can find no evidence that such costs were requested prior to 1972. The mere repetition of such a claim does not make it a fact.

(2) "6-2-72 . . . Meanwhile in an effort to discourage their customers from purchasing our equipment, Bell had given their customers varying costs for use against us. (Exhibit 23.)"

Exhibit 23 contains no such statement, and there is not one shred of proof placed in evidence by Mr. Fox to support it. It is totally unclear as to what Mr. Fox means by giving their customers "varying costs for use against us." Michigan Bell charges only tariff rates, and certainly makes no effort to discourage customers from purchasing equipment from competitive suppliers "by giving varying costs."

(3) "6-30-72 Michigan Bell wrote our company advising us that they would provide trunks for the non-Bell System at Calvin College dormitory (sic). However, these trunks would be business flat rate trunks and converted to measured service in October, 1973, contrary to Michigan Bell's own policy of charging the lower residential trunk rate to its college customers. (Exhibit 25.)"

This is totally false. At the time of the policy change to come 3 months later, discussed on the previous page, Michigan Bell had four PBX service (non-Centrex) college customers where business rates applied to the trunks serving the dormitories. These schools were Albion, Ferris State, Marygrove and the University of Detroit. Obviously, Michigan Bell's policy was consistent; it treated its own customers the same as it proposed to treat TPI's customers. There were residential rates only for those colleges which had Centrex CO, e.g., University of Michigan, Michigan State and Western Michigan University.

(4) "7-18-72 Michigan Bell Telephone Company finally responded to our request for a cable quotation for Calvin College. . . (Exhibit 26.)"

Michigan Bell in the letter designated Exhibit 26 did make an estimate as to the current value of the cable facilities at Schultze-Eldersveld Hall at Calvin College. However, that is the extent of the truth of this statement. The clear

implication by Mr. Fox is that TPI had had no communication or correspondence with Michigan Bell regarding the cable quotation or regarding the purchase of cable facilities since he made the request in August of 1970 referred to on Page 6 of his statement. That is not the fact, as the following documents show.

Mr. Fox's own Exhibit 12 shows that the request of August 3, 1970, was for the cable facilities at the Calvin College Seminary. Michigan Bell wrote to TPI on November 5, 1970, advising that as of that date the policy to sell or lease cable was being reviewed by upper management and that as yet no decision had been reached. (Michigan Bell Exhibit 6) Two weeks later in a letter to Mr. DeWitt, Michigan Bell offered to inventory Michigan Bell's interior cabling at Calvin Seminary. This letter further stated that offering cable facilities for sale at a customer's request was a new policy with Michigan Bell and a formal procedure was still under development, but that in the interest of time Michigan Bell would process the inventory and cable cost quotation as expeditiously as possible. (Michigan Bell Exhibit 7) Less than two weeks later, Michigan Bell gave to Calvin College in a letter dated December 3, 1970, an inventory of the cable facilities in the Calvin Seminary building of \$1,311.28, which was broken down into the various pairs of cable, the various kinds and amount of wire, the terminal cabinets, the terminal blocks and the associated connectors and connecting blocks. (Michigan Bell Exhibit 8) On December 17, 1970, TPI wrote back to Michigan Bell and stated that the cost quote was not acceptable and that they would be willing to offer to purchase the facilities for \$600. (Michigan Bell Exhibit 9) On December 22, 1970, Michigan Bell replied to TPI that it could not accept the offer to purchase for \$600 in view of the fact that the original quotation of \$1,311.28 had been reviewed and adjudged to be a proper appraised value for the facilities. (Michigan Bell Exhibit 10) Clearly, TPI as well as Michigan Bell considered the transaction relating to the Calvin Seminary closed. Then on June 23, 1972, TPI requested Michigan Bell to provide an estimate of the existing building cable and interior wiring at the Schultze-Elderveld Hall of Calvin College. (Michigan Bell Exhibit 11) On July 18, 1972, less than one month after the request, Michigan Bell gave TPI the quote for the Schultze-Elderveld Hall.

(5) "7-18-72 . . . One dormitory's cable and terminals were itemized, with the current value of those facilities shown by Bell at \$1,695.42. At the same time, utilizing one of the largest sources of supply to the interconnect industry for cable and terminals, it was determined that the list price to purchase these facilities new, would be only \$246.38. (Exhibit 26.)"

Exhibit 26, being Michigan Bell's letter of July 18, 1972 quoting the current value of the facilities, does *not* support this statement. Mr. Fox offers no proof at all to support the figure of \$246.38. He quotes no supplier. He has no breakdown such as was given to him by Michigan Bell, and he does not even purport to indicate from whom or under what circumstances the price would be \$246.38.

However, even assuming *arguendo* that this is an accurate amount, clearly he is not making an appropriate comparison. Michigan Bell's costs include engineering and costs of installation. Obviously, the other can be no more than a catalog cost. The method for determining the Michigan Bell price is set forth in the Bell System General Practice, Section 002-654-025-MB, Issue D, September, 1973, which is the practice that Michigan Bell follows.

Page 10

(1) "7-25-72 Michigan Bell wrote our company advising us that per their tariff No. 3 certain types of toll terminals are provided without charge (in the interest of efficient toll service for the public). Since the toll terminal we had ordered for Calvin College, did not fall in that category in their opinion, they would provide them on a billed basis. (Exhibits 27 and 28.)"

Exhibit 27 is a letter from TPI to Michigan Bell. Exhibit 28 is a letter from Michigan Bell to TPI which seems to be the letter that Mr. Fox purports to quote. However, Exhibit 28 shows Michigan Bell stated that, "Since the toll terminals you requested do not fall in this category, we are providing them on a billed basis. . . ." This is consistent with Mr. Fox's Exhibit 8 in which Michigan Bell advised that it reserved the right to determine whether toll terminals could be provided on a non-billed basis depending upon the circumstances. Further, as pointed out on page 4 above, toll terminals are normally only pro-

vided on a non-billed basis to hotels and hospitals in order to facilitate the obtaining of time and charges for their billing purposes.

(2) "8-18-72 The Director of the Department of Commerce, State of Michigan, wrote our company stating that dormitory trunk rates should be at the lower residential tariff rate, regardless of whether Michigan Bell provided the station equipment or an outside supplier, such as our company, provided it. . . (Exhibit 29.)"

This is a blatant misquote. Exhibit 29 states that, "At present the only residence service offered by Michigan Bell for college dormitories is in connection with Centrex CO service." Then, after two intervening sentences regarding what these rates were and Michigan Bell's plans regarding a special trunk rate for dormitory PBXs, the letter states: "The trunk rate is the same, regardless of whether Michigan Bell provides the station equipment or an outside supplier such as yourself provides it." Exhibit 29 does not state that this is what "should be" as Mr. Fox said it did. It states what Michigan Bell does.

(3) "10-26-72 Michigan Bell wrote our company stating that they still did not have an answer on the Calvin College Centrex interconnection rates, but they did expect to have the rates during the week of October 30, 1972. (Exhibit 30.)"

Michigan Bell did not say that it "still" did not have an answer on Calvin College. Exhibit 30 states:

"In regard to your letter dated September 21, 1972, on Calvin College Centrex rates, as I told you in a telephone conversation on September 22, I would give you a status report by October 30th. Although I do not have an answer at this time, I expect to receive the rates during the week of October 30th."

Pages 10-13

Mr. Fox spends three pages of his statement purporting to describe the allegations of a "complaint" which was filed by TPI with the Michigan Public Service Commission on February 7, 1973.

(1) This "complaint" filed with the Subcommittee as Exhibit 31 by Mr. Fox differs substantially from the formal complaint which was served on Michigan Bell by the Michigan Public Service Commission on February 9, 1973 and which, of course, is the complaint to which Michigan Bell responded. (Michigan Bell Exhibit 12) In the first place the "complaint" he introduces as Exhibit 31 is not complete, is not signed, and is not stamped by the Commission with any indication that it was filed.

More importantly, there are substantial differences in substance. For example, the complaint actually filed with the M.P.S.C. and served upon Michigan Bell contains no reference to Ferris College, as Page 11 of Mr. Fox's testimony and Page 3 of his "complaint" apparently attempt to lead this Subcommittee to believe. Similarly, the complaint actually filed with the M.P.S.C. and served on Michigan Bell makes no reference to St. Mary's Hospital as page 12 of Mr. Fox's testimony and paragraph 13 of his "complaint" indicates. Clearly the "complaint" offered by Mr. Fox can be given no credence.

(2) The complaint filed with the M.P.S.C., of course, contains self-serving allegations as do the complaints in many court or administrative proceedings. Michigan Bell, also as in other court or administrative proceedings, filed its Answer to that Complaint. (Michigan Bell Exhibit 13) In its Answer, in response to the allegations which are reiterated at Page 10 of Mr. Fox's testimony regarding the request for "Centrex interconnect rates for Calvin College," Michigan Bell admitted that on September 21, 1972, TPI informed Michigan Bell that Calvin College "had formally agreed to interconnect" and requested "Centrex interconnect rates" therefor. Michigan Bell also admitted that "rates for direct inward dialing (DID) and automatic identification of outward dialing (AIOD) central office features and connecting arrangements for the interconnection of customer-provided PBX systems with Centrex-type features," had been requested and had not been furnished, stating that "it has been unable to develop the rates in the form requested due to the complexities of such an undertaking and the availability of necessary data." Michigan Bell further responded that its own Centrex service contained no separate offering or rates for DID and AIOD, and that it had provided Complainant with certain estimated order of magnitude charges.

Page 13

(1) "2-13-73 Michigan Bell wrote a letter to Calvin College requesting that they authorize Michigan Bell to deal with our company on all telephone matters. . . . (Exhibit 32.)"

Exhibit 32 is no more than a request for a confirmation of the scope of authority of Michigan Bell in dealing directly with TPI in matters pertaining to the Calvin telephone system. This obviously was required in view of the fact that the original letter of authorization to Michigan Bell from Calvin College regarding TPI applied only to TPI as a communications consultant. Clearly, TPI was now operating on a different basis and Michigan Bell, as a matter of good business had to obtain confirmation from Calvin College as to the scope of TPI's authority. Exhibit 32 was entirely appropriate.

(2) "2-13-73 . . . They later used this letter of authority to refuse to accept orders from Calvin College for day-to-day repair service, billing requests and so forth, claiming that the College must call our company and our company in turn must call Bell. (Exhibit 32.)"

Exhibit 32 being Michigan Bell's letter certainly does not support this statement and Mr. Fox offers nothing else that would support it. Further, Mr. DeWitt, a Vice-President of Calvin College, on August 24, 1973, wrote to the Michigan Bell Communications Representative confirming the scope of TPI's authorization to act for the college, adding:

"I take this opportunity to express my appreciation for your cooperation with us and with TPI during this period of transition. I am certain these good relations can continue." (Michigan Bell Exhibit 14)

Clearly, Calvin College did not feel that Michigan Bell had been refusing orders or otherwise failing to cooperate.

(3) "3-30-73 Michigan Bell wrote our company's attorney outlining their proposed charges applicable for the provision of privately owned Centrex service. They indicated that they would file a tariff containing the outlined charges as soon as their work load permitted. . . . (Exhibit 33.)"

Exhibit 33 is written confirmation of proposed rates which had been given to TPI at a meeting which took place on March 27, 1973, between Michigan Bell and its counsel, and Mr. McKersie and Mr. Fox representing TPI, and TPI's counsel. However, Mr. Fox fails to add the important fact that it was also stated at this meeting and in Exhibit 33 that Michigan Bell would file for a tariff containing the outlined charges as soon as the workload permitted, "but in any event prior to the time the initial service is placed in operation." As TPI and its counsel had been advised at the meeting of March 27, since the lead time for installation of Centrex was 18 months, because Michigan Bell was extremely busy working on its pending rate case and other matters the tariff would be filed as soon as the workload permitted, but, in any event, if TPI got a firm order, Michigan Bell would be certain that the tariff was filed in time for that service to be provided. To date, Michigan Bell has not received any order for interconnection of a customer-provided PBX with DID or AIOD features despite the fact that TPI has had these rates to quote for well over one year.

(4) "3-30-73 . . . Charges set forth did not allow for a customer to provide his own outgoing toll identification, as had been indicated in all competitive proposals made by Michigan Bell to that date. (Exhibit 33.)"

There are two problems with this statement. In the first place, the Michigan Bell Centrex Tariff provides solely for DID and AIOD features combined. Thus, we are totally at a loss as to what Mr. Fox means by "as had been indicated in all competitive proposals made by Michigan Bell to that date." Secondly, the statement implies that TPI had asked previously for rates to provide AIOD separately. Mr. Fox himself acknowledged at the meeting of March 27, that they had not done so. This is confirmed by the letter introduced by Mr. Fox as Exhibit 34, in which TPI formally confirmed the request made at the meeting that Michigan Bell provide them with separate rates for interconnect for AIOD. Paragraph 3 of Page 1 of Mr. Fox's own Exhibit 34 states:

"Therefore, this letter will serve as our client's request that Michigan Bell provide a fixed rate break-out for AIOD on a customer provided Centrex CU."

On May 24, 1973, a Michigan Bell attorney wrote to TPI's attorney advising that Michigan Bell would include in the tariff when filed separate rates for AIOD and DID Central Office features, although such rates had not yet been developed. (Michigan Bell Exhibit 15)

(5) "4-24-73 Our company's attorney wrote Michigan Bell requesting them to provide a fixed rate break-out for out-going toll identification on a customer provided Centrex as all written and oral estimates to our company's prospective customers had been made in that manner. . . . (Exhibit 34.)"

Again Michigan Bell does not know what is meant by this, since Michigan Bell did not offer such a thing.

Page 14

(1) "4-19-74 Our attorney wrote Michigan Bell stating that it had been over a year since he had first met to discuss Centrex interconnect rates. . . . (Exhibit 35.)"

Michigan Bell had not yet filed a tariff application with the Michigan Public Service Commission. However, there was no urgency expressed in the letter and no indication that TPI had or was about to have a firm order. The last paragraph of Exhibit 35 simply asks:

"Will the Centrex interconnect rates be covered by your soon to be filed general rate application? If so, when will this application be filed? If not, when do you intend to file for Centrex interconnection rates?"

In response to this request and despite the fact that TPI had not yet obtained a customer or placed a specific order with Michigan Bell for such "Centrex interconnect", a General Attorney for Michigan Bell in a telephone conversation on May 8, 1974, advised TPI's attorney that Michigan Bell would be filing the DID-AIOD tariff application sometime "next month." TPI's attorney did not take exception to this statement. Further, pursuant to that conversation, the application for DID-AIOD Central Office features was filed on June 28, 1974. (Michigan Bell Exhibit 16)

Pages 14 and 15

(1) "Refusal of over four and one-half years to furnish reliable rates for the interconnection of a privately owned Centrex system."

Michigan Bell did not refuse for over 4½ years to furnish reliable rates for the interconnection of a privately-owned Centrex system. Although Michigan Bell cannot verify whether there may have been a verbal request shortly before-hand, the June 2, 1972 letter to the Michigan Public Service Commission is the first written request received by Michigan Bell for rates for "Centrex interconnection" and the September 21, 1972 letter is the first formal request for such rates for Calvin College. Further, March of 1973 is the first time when Michigan Bell had a request for the rates for providing DID and AIOD separately. Rates for DID and AIOD Central Office features combined were furnished to TPI in March, 1973, approximately 6-9 months after the request, and an application for tariff rates for DID and AIOD Central Office features and connecting arrangements (whether DID, AIOD or both were to be provided) was filed on June 28, 1974, slightly more than a year after that request. This was accomplished despite Michigan Bell's heavy workload, because Michigan Bell personnel felt they had made a commitment to TPI, and even though TPI still has not obtained a firm order (which would have taken 12-18 months to provide service and given Michigan Bell ample time to file the tariff.)

(2) "Offer to furnish a customer a telephone company provided Centrex system at a rate of return well below desired levels and below that provided by tariff, and, indeed, at a rate below invested cost in order to prevent the customer from going "interconnect".

Michigan Bell never offered to provide a Centrex system at a rate below that provided by tariff. Michigan Bell can and did only offer to provide Centrex I Co at the tariff rate, which of course was set on an averaging basis, wherein some customers will be above and some will be below the desired rate of return, depending on the Central Office facilities involved and the requirements for modifying the Central Office. (See page 2).

(3) "Attempt to impose Business rate trunking charges on privately owned telephone equipment users while at the same time charging the lower residential rate trunking charges to the telephone company's own customers."

As shown previously, Michigan Bell applied the same rates to customer-provided PBXs at colleges as it did to its own. (See page 14).

(4) "Attempt to charge privately owned telephone equipment users for toll terminals while not similarly charging the telephone company's own customers for toll terminals."

There is not one shred of evidence introduced by Mr. Fox which shows that Michigan Bell attempted to charge privately-owned telephone equipment users for toll terminals while not similarly charging the telephone company's own customers. As stated twice previously, Michigan Bell only provides non-billed toll terminals to hotels and hospitals in order to facilitate reporting time and charges.

(5) "Refusing to sell Bell cable facilities required for the interconnection of a privately owned telephone system for less than approximately 700% of the price at which new cable could be purchased from outside sources."

It is obvious that Mr. Fox is comparing the installed charge, including labor and engineering cost, with a catalog price. If he is doing otherwise, he has not submitted any evidence which would so indicate. As Michigan Bell Exhibit 17 shows, Michigan Bell has sold to date \$99,070.85 worth of cable to others, including \$6,599.88 worth to TPI or its customers. Clearly if Michigan Bell were doing as Mr. Fox alleged, no cable would be purchased by interconnect customers.

(6) "Threatening a non-profit corporate customer with the withholding or withdrawal of charitable grants presently planned or to be made in the future in accordance with past practices."

This was refuted by Mr. DeWitt in Michigan Bell Exhibit 5.

(7) "Offer by the Bell System to provide the same telephone equipment offered by the competitor at standard tariff rates but without the interface device."

Mr. Fox submitted no proof of this, but as stated before Michigan Bell could have indicated that it would investigate this possibility. However, at that time Michigan Bell had not yet investigated the Stromberg-Carlson vehicle and such an offer could not have been made under existing tariff rates, since the particular vehicle has different capability than the vehicle upon which Michigan Bell's tariff rate was based.

Page 15

(1) "Although these are the most indicative of the practices encountered by us on the Calvin College project, they are in no way restrictive of the many, many other competitive tactics we run into on our day-to-day encounters with Michigan Bell. Some of these included numerous cases or harassment related to wrong directory listings, no transfer of calls from disconnected numbers, frequent out of service conditions on lines and interfaces and billing errors."

Mr. Fox has submitted no proof as to how many of these situations occurred nor any indication that there was harassment. In any event, while Michigan Bell would wish that none of these things happen to any of its customers and makes every effort to prevent them from happening, the facts are that they do happen regardless of whether competition is involved.

II. PROTECTIVE CONNECTING ARRANGEMENTS ARE NOT ANTICOMPETITIVE

In Pages 16 through 21 of his statement, Mr. Fox makes a number of claims purporting to show that Michigan Bell and the Bell System uses the requirement for a protective connecting arrangement as an anti-competitive device. These claims are totally unfounded and unsupported, as the following responses to the specific charges show. Further, the required connecting arrangements, by protecting the quality of telephone service while permitting the customer to own his equipment, rather than being "anticompetitive" are a means of permitting "competition."

Page 16

(1) "In many areas, Michigan Bell Telephone Company will not install the interface until their system has been disconnected on the customer site."

This is true, because Michigan Bell's policy as to all jobs, regardless of who supplies the terminal equipment, is to provide the requested service on one-visit basis to avoid lost production hours. On any job Michigan Bell does, the practice is to stay there until it is finished, unless it is so big that it requires more than one day's work.

(2) "Further this practice does not allow for standard telephone industry pre-cutover test procedures."

Michigan Bell is unsure what he means by "standard telephone industry

pre-cutover test procedures" since we are aware of no such standard procedures. However, Michigan Bell's practice is to test its equipment to the point of demarcation including the connecting arrangement and turn it over on the requested day. A cutover, by definition, is the provision of Michigan Bell facilities on the date wanted. What TPI has been asking Michigan Bell for is to provide either a standby person throughout the cutover, or out-of-hours or non-business day cutovers so they can cut back to Michigan Bell facilities in the event something goes wrong. Both would be very expensive procedures to implement, and TPI has not indicated a willingness to pay for them. Even if TPI was willing to pay for them, to do them would detract from the use of the installers to provide service requested by other customers, and could constitute discriminatory and preferential treatment.

(3) "When a faulty interface is installed, or when it subsequently malfunctions, the customer often must do without the line serviced by that device for a long period of time as there generally are no spare maintenance parts in the area Bell offices, thus causing impairment of customer services until the problem can be corrected."

Failures of apparatuses of any kind may occur at any time. These failures are cared for by Michigan Bell in the most expedient way, regardless of what apparatuses are involved, so as not to inconvenience the customer. Parts are stocked for connecting arrangements as in the case of all other apparatus, as shown by Michigan Bell Exhibit 18, the Supplies Catalog listing interconnect apparatus stocked at the Michigan service center.

(4) "Initially, interfaces would not permit touch tone calling or data signals to be transmitted. This restriction was capitalized on by Bell Salesmen at the direction of upper management as shown in Exhibit 36."

Exhibit 36 is the third issue in 1972 of a publication issued from time to time by Michigan Bell Marketing staff for the purpose of advising and informing the field of current items of interest primarily related to competitive activities. At the point in time that it was issued, an interface device that would permit transmission of data was not available. As a result, the sales force had to be so notified. Should a customer having need to transmit data consider purchasing or purchase a private system it was Michigan Bell's responsibility to inform him that he would not be able to transmit data, since he was still our customer for lines and other services. Attached as Michigan Bell's Exhibit 19 is the voice-connecting arrangement technical reference which indicates that interfaces CD 6, 7, 8 and 9 and CDH to provide for Touch-Tone signalling became available October, 1970 and January, 1971. Michigan Bell received tariff approval on August 23, 1971, to permit Touch-Tone calling from Customer-owned equipment.

Page 17

(1) "Bell salesmen are instructed to impress upon the customer that interface devices 'are a real cost that he must consider'. (Exhibit 37.)"

It is true that Michigan Bell does advise of the requirement that the customer have an interface device and there is a charge for such device, obviously the customer should be advised. The rest of the statement is inapplicable to Michigan Bell. Exhibits 37 and 37A submitted by Mr. Fox in support of this statement are not even Michigan Bell training material. Michigan Bell material stresses that salespeople should only factually point out to a customer the cost of the interface device. This is shown by Michigan Bell Exhibit 20, Sales Information Series 632, which states:

"When the Marketing representative is informed that the customer has actually placed an order for non-Bell equipment, an offer to provide or sell complete Bell service should *not* be made. A factual statement concerning the Tariffs, the interconnecting arrangement, the technical criteria and the maintenance of service visit charges should be offered."

(2) "The tariff required interface devices on customer-provided telephone equipment makes it necessary for our company to rely on Michigan Bell's delivery and production schedules for such equipment as Michigan Bell and/or Western Electric is the source of supply. In making competitive proposals, Michigan Bell has deliberately refused to provide reasonable delivery schedules for interface units and has unfairly utilized its position as the sole source of supply for interfaces indicating, as a selling point to our potential customers, that the delivery schedule for its own telephone company-provided system is

better even though they control delivery schedules for both types of equipment. While most Bell-provided systems carry a one or two week delivery interval, those that have been associated with interface equipment are shown on the attached Exhibits 38, 39, 40, 41, 42, 43, 44, 45, 46 and 47."

Through July, 1972 Michigan Bell did have trouble obtaining the CD 9 and STC connecting arrangements referred to in Mr. Fox's Exhibits 38 through 47. This was due to the heavy national demand for the arrangements and the factory allocations were resultantly slow. However, by February, 1973 Michigan Bell was advised by Western Electric that there was sufficient stock so that these interface devices could be ordered on the normal key intervals: up to 5 devices—an interval of 1 week; from 5-11 devices—an interval of two weeks; more than 11 devices—it would have to be negotiated depending on the requirements and the supply available.

TPI appears to be satisfied with this interval inasmuch as in the April 27, 1973 letter Mr. Fox submitted as Exhibit 34, TPI's counsel indicates to Michigan Bell the satisfaction of TPI with the 2-week delivery interval on CDHs and CD 9s and STCs. This, again, was a confirmation of statements made by Mr. Fox himself during the course of the May 27, 1973, meeting referred to on page 22 above.

Page 18

(1) "Michigan Bell personnel have stated that the reason we experience installation and service problems on interface equipment is that no formal training program exists in the Bell System for interface equipment. . . ."

Michigan Bell installers and repairmen receive basic and advanced courses in such areas as basic electricity, circuit reading, general electronics and trouble-locating procedures. This training is supplemented by Bell System practices and interconnection manuals, in addition to on-the-job training provided by supervisors. This type of training and field orientation is no different from most new hardware introductions. A Bell System practice is available for each connecting arrangement which provides installation, connection, operation, testing and maintenance information and does not differ from any new station apparatus introduction, for example, telephone sets or dialers.

(2) "Further, on key system interfaces, Michigan Bell craft personnel do not have the proper tools or test equipment specified in the Bell System Practice, 463-340-101, starting with a special wrench to remove the cover, to a test set (KS-20721) for testing proper output of the unit."

Michigan Bell craft personnel do have the appropriate equipment. However, initially a special wrench was required to remove the cover from the set for testing proper output, and, as in the case of the connecting arrangements, the wrench was in short supply. This condition was resolved shortly after the problem arose by using slotted screws for cover removal. The associated test set, KS-20721, initially had the same supply problem as the wrench. However, in September, 1972 each operating district was supplied a test set pending further availability. These test sets have been in normal supply for some time.

(3) "In an analysis of customer trouble reports from January 1972 through June 1972, it was found that over 95% of the problems were caused by Michigan Bell's interface as shown on Exhibit 48."

Exhibit 48 is nothing more than a letter indicating that Arcata Communications had experienced problems. Thus, it certainly is not proof of that statement and there is no study or analysis of representative customer reports for all interconnect customers or even for TPI introduced by Mr. Fox to substantiate this speculation.

Further, attached as Michigan Bell's Exhibit 21 is a letter from the Detroit Metro Area Sales Manager instructing the sales supervisors to "instruct your people to be as scrupulous in coordinating interface installations and in meeting call-back commitments with our competitors, after the loss of a sale, as they would be in dealing with any other of our customers in normal day-to-day negotiations."

(4) "Beyond technical training, the personnel taking normal repair reports from customers lack the training and procedures for handling interface repair cases thus, adding days to a repair request even in out-of-service situations."

Michigan Bell personnel taking repair reports handle trouble calls from all customers in the same manner and do not have special procedures for cases where the customer provides his own terminal equipment. These persons are

highly trained and closely supervised so as to provide the same quality of contact handling on all of our customers. Expected clearing times on trouble cases for business customers in any given location are quoted the same and based on the available force, trouble load, weather conditions and similar factors, regardless of whether Michigan Bell or customer-provided equipment is involved.

Page 19

(1) "Added to the delays in repairing of interfaces is the practice of billing a maintenance of service fee to the customer by Michigan Bell, even though the problem is ultimately determined to be Michigan Bell's or 'comes clear.'"

The maintenance of service fee is necessary to assure that the burden of the costs incurred is borne by the customer causing them rather than the general rate payer, and is provided for by tariff. (Michigan Bell Exhibit 22)

It is Michigan Bell's practice that in any case where the trouble is ultimately found to be in the telephone company equipment or facilities and the maintenance of service charge was previously billed, an adjustment to the customer's bill is made upon application to the Business Office.

In a letter to counsel for TPI dated August 30, 1973, Michigan Bell in response to a request regarding the application of the charge when the trouble "comes clear", stated as follows:

"If I correctly understand your request with regard to the maintenance of service charge, you wish to be advised whether Michigan Bell charges a customer for a repair call where the 'trouble clears by itself' and whether Michigan Bell will tell TPI or its customer the source of the problem.

"Michigan Bell Telephone Company's practice is that no maintenance of service charge will apply when the trouble report 'tests OK'. This would include situations where the 'trouble clears by itself'.

"The maintenance of service charge is applicable to all cases requiring a visit by a Michigan Bell repairman when the trouble was not located in Michigan Bell facilities, and in that situation the Plant Department is to notify the customer. Thus, the customer should in each case know why he was billed a maintenance of service charge. We do not notify the equipment supplier in each case because generally the calls come from the customer and we may not know the identity or location of the supplier. Should a question arise concerning a particular billing, Graham Smith may be able to assist your client." (Michigan Bell Exhibit 23)

Apparently, this response was satisfactory to TPI inasmuch as Michigan Bell has received no indication to the contrary until Mr. Fox's statement.

Pages 19-21

"The consumer is discriminated against because of the rate he pays for the interface device."

Mr. Fox spends the rest of page 19, and all of pages 20 and 21 describing what he feels is unfair about the existing and proposed tariffs. Perhaps it will clarify this matter to reiterate a little history.

In 1970 Michigan Bell filed its tariff for a connecting arrangement to be used to interconnect customer-provided alarm indicating equipment. The tariff rate for this service was set at \$3.75, based on the costs of a device known as the SU6 used to provide the service. At the same time Michigan Bell filed its tariff for a connecting arrangement to be used to interconnect customer-provided voice transmitting equipment. The tariff rate for this service was set at \$6.50 based on the costs of a device known as the STC used to provide this service. A revised version of the STC, sometimes called the Universal Coupler, later became available and replaced the original STC. This device could be wired to also perform the same function as the SU6, and when so wired is called the SU6AQ. In some cases this device was used to connect alarm-indicating equipment at the \$3.75 rate. TPI argued that it should be able to use the SU6AQ to interconnect voice transmitting equipment at the existing tariff rate of \$3.75 established for alarm-indicating equipment interface devices. This argument fails to recognize that Michigan Bell offers services, not merely hardware. Moreover, in establishing the rates for the existing services, the costs of the Universal Coupler were not known or considered. Recently Michigan Bell filed an application to amend its tariffs with respect to interface devices, which application proposes new rates that will cover the costs of the newer interface devices such as the STC Universal Coupler. The proposed rate for the Universal Coupler is \$4.75.

(2) "For, we believe, the first time in the history of the Michigan regulatory process the Commission rejected a Michigan Bell rate application on the grounds that the rates proposed were too low. As a result Michigan Bell was compelled by the Commission Staff to file another amendatory application to further increase anti-competitive rates for these interface devices, to \$5.10."

In the first place, in Michigan Bell's 1973 rate case, No. U-4293, the Commission ordered Michigan Bell to file higher rates than originally proposed based on updated cost data, which is exactly what the Commission Staff requested in the interface case. Secondly, the Commission Staff apparently felt that since Michigan Bell had obtained later cost data than it had when it filed the interface tariff application, it should refile the rates based on the updated costs. Certainly, there is nothing anti-competitive in basing rates on cost. Indeed, that is the position taken by the Michigan Independent Communications Association in Case No. U-4293 and the appeal thereof. They say in that case that Michigan Bell rates must be based on cost, which is exactly the situation in the interface tariff case.

III. THE ROLE OF REGULATION IS TO PROTECT THE PUBLIC INTEREST

Pages 22 through 26 of Mr. Fox's statement are a diatribe purporting to describe how Michigan Bell has attempted to perpetuate its monopoly position through the state regulatory process. The only support that he gives for such a statement is an argumentative discourse on how he views Michigan Bell's previous Rate Case, No. U-4293. This case is on appeal from the Michigan Public Service Commission to the Ingham County Circuit Court. The very issues which Mr. Fox states here are being raised in that proceeding. It is entirely inappropriate for him to comment as though his arguments were fact. Further, Mr. Fox appears to assume that the role of the regulatory agency is simply to preserve the competitive position of interconnect companies. As stated by the Michigan Public Service Commission in its Order in Case No. U-4293, "the role of regulation is not to serve the interests of a specialized few, but to protect the general public in every possible respect." The following are responses to the only specific allegations he makes.

Page 23

(1) "On February 23, 1973, the Commission issued its order for hearings on the application and gave all potential intervenors until March 20 to file their petitions to intervene in the case. Thus, we were given less than one month in which to analyze fully a rate application consisting of 462 pages of testimony and exhibits which were based on cost and information studies available, at that time, only to the telephone company. . . ."

Having one month in which to file their petitions to intervene meant they had one month in which to state their positions and the issues they wished to raise. It did not limit their ability to fully analyze the testimony and exhibits. The case was filed on February 15, 1973, and cross-examination of the Company's witnesses did not commence until April 18, 1973. Cross-examination of the first of the two witnesses presenting the Company's evidence in support of its rate proposal for terminal equipment did not commence until June 19, 1973. Therefore, they clearly had ample time in which to analyze the Company's case.

Page 24

(1) "In addition, the testimony of one of our key witnesses was excluded by the Hearing Examiner because it was not timely filed after it had been revised to meet certain objections of the Hearing Examiner at the time of its original filing. As a result, we were denied the right to present a witness and to introduce testimony we felt was very important to our case."

This testimony was excluded by the Hearings Examiner because it was totally argumentative. The facts regarding this witness are as follows: In accordance with the time schedule established by the Hearings Examiner all intervenors submitted the complete direct testimony of all their witnesses on August 8, 1973. Intervenors Litton/BTS and MICA, of which Mr. Fox has indicated his firm is a member, and which is represented by the same counsel that represents TPI, jointly included in their submission 37 pages of direct testimony of one Warren J. Samuels. Two weeks later the Hearings Examiner

granted a motion by Michigan Bell to strike all of the Samuels' testimony from the record, observing "in regards to the testimony of Samuels, I have absolutely no doubt in my mind that the testimony far exceeds permissible testimony of an expert witness." The Hearings Examiner based his decision principally on the grounds that Samuels' testimony was "full of unsupported conclusions, innuendos, speculation and hearsay as well as comment as to credibility and weight to be given evidence", that it "should be properly labeled not as evidence but as argument" and that the Examiner could "find no probative value in it". On August 28, 1973, Litton filed a motion to reconsider the testimony of Samuels. Michigan Bell, contended that the motion should be denied for two reasons: (1) having had its opportunity to submit its case in chief on August 8, Litton should not be allowed three weeks later to protract the hearing with evidence which was available to it on August 8, and (2) the new version of Samuels' testimony was still objectionable on the same grounds as the stricken, original testimony. The Hearings Examiner denied the Litton motion for the first of the two reasons and therefore had no need to consider the second. At the same time the Hearings Examiner rejected a contention by Litton that the new Samuels' testimony should be admitted as rebuttal evidence for the simple reason that it did not qualify as such. However, the Commission in its Order stated that it did accept the Samuels revised testimony, although after reading it the Commission agreed with the Hearings Examiner that it was argumentative and had no probative value. Thus, the intervenors clearly were not denied an opportunity to present the witness as alleged by Mr. Fox.

(2) "... the application of Michigan Bell to restructure its rates, which was accepted completely in concept, resulted in rate reductions to those Michigan businesses most vulnerable to competition and rate increases (in one instance by over 150%) to those businesses who either because of the anti-competitive effect of the interface device prices or for other reasons were not vulnerable to competition, i.e., the captured market."

Mr. Fox fails to point out, however, that the 150% increase (he appears to refer to the two line key systems) was still not large enough to make this service totally compensatory. Hence, this large increase in rates is not anti-competitive at all; Michigan Bell Telephone Company will not earn the full revenue requirement. It should be added that when Michigan Bell uses the word *not* compensatory, what Michigan Bell means is they do not return the full 9½% rate of return requested by Michigan Bell for terminal equipment, although they do return all actual costs plus some profit. Further, if Michigan Bell had proposed rates for these small key systems to cover all costs plus a full 9½% return, the rates on the larger key systems could have been reduced even further. But this was not done because the customers for the smaller key systems had received such a large increase, they simply could not be asked to pay more. The restructuring complained of had the effect of increasing revenue for terminal services and of establishing a cost basis for these services.

Page 25

(1) "I am attaching to my testimony as Exhibit 53A a graph submitted by our Michigan Interconnect Association in the 1973 rate case to show the competitive effects of the rates proposed by the telephone company when the price of the interface device is taken into consideration."

This graph was simply an estimate of what MICA thought would happen. Mr. Fox has submitted no facts showing how the industry was affected in fact.

(2) "Another example of how Michigan Bell used the 1973 general rate case to further its goal of eliminating competition was its proposal commonly referred to as the '90-day moratorium'."

This is not so. Under the restructuring ordered in Case U-4293, existing customers were reclassified as PBX I, II or III depending on the equipment used to provide them service. In some cases, customers having the same or similar service requirements were reclassified as PBX I or II on the one hand, and PBX III on the other. The moratorium authorized a changeout without payment of termination charges for a period of 90 days following the rate order in Case U-4293 by those customers who, because of the nature of the serving vehicle being used to provide them service, were reclassified as PBX III, which costs more, rather than PBX I or II. The moratorium was necessary and equitable because Michigan Bell, not these customers, had selected the

serving vehicle used to provide them service. Hence, the purpose of the 90 day moratorium was simply to eliminate this unfairness.

Page 26

"The end result of this anti-competitive proposal was that Michigan Bell was successful in signing up 102 Michigan customers to the new five-year contracts. However, not known by anyone at the time except Michigan Bell (but soon to be found out) was that these 102 customers, who are now locked into the Bell System and have nowhere else to turn for their equipment needs, were confronted less than one month after the expiration of the 90 day moratorium with a new general rate application (filed by Michigan Bell on April 23, four months after the decision was rendered in the 1973 rate case) requesting, among other things, an average rate increase of 16% to these customers."

Michigan Bell obviously would not file a \$111M rate case just to lock in 102 customers. Further, if the rates were as anti-competitive and had the effect that Mr. Fox claims, Michigan Bell, if it intended to be anti-competitive, would have left them alone rather than proposing increases up to 31%. After all, the proposed rates will apply to all PBX I and II services, present and future, not just to the 102. This argument is clearly specious.

(2) "Finally, I am attaching as Exhibit 54, a portion of the transcript in the 1973 Michigan rate case containing remarks made by the Hearing Examiner, Mr. Sheridan, to the effect that he was concerned with the presence of the interconnect people in the case and had grave doubts whether the Commission should even be concerned with the competitive effects of Bell's proposed rate structure."

He fails to mention that the Commission in its Order explicitly states that it did indeed consider the alleged anti-competitive effect. While the law does not require the Commission to make its decision on the reasonableness of rate solely based on whether or not they are anti-competitive, the Commission may consider the competitive effect. This is exactly what the Commission did.

(3) "... if the Public Service Commissions around the country don't care what the Bell system does to interconnection, then who does care and who do we look to for protection against this Goliath?"

Clearly, the Public Service Commissions around the country do take competitive effects into consideration as did the Michigan Public Service Commission in Case No. U-4293; but the function of a Public Service Commission is not to protect special interests but to protect the entire rate-paying public.

IV. MICHIGAN BELL DOES NOT ENGAGE IN ANTICOMPETITIVE PRACTICES

In the remaining 14 pages of his statement Mr. Fox makes a number of baseless statements purporting to show anticompetitive practices utilized by Michigan Bell in Michigan. The facts lead to the opposite conclusion.

Page 27

(1) "With the advent of competition in 1970, the entire composition and policy of the Michigan Bell Marketing Department was changed. Massive employment and training programs were initiated for salesmen. Clerical help was added to free the salesmen so that more accurate, detailed and professional proposals could be provided."

Michigan Bell is entitled to compete. If it is to compete, it must have a sufficient staff of salespeople and supporting personnel, who are well versed about the products they sell. Michigan Bell's activities are not only permissible, but required if it is to effectively provide service and cost benefits to all of its customers.

(2) "Studies of the product line were conducted as shown in Exhibits 55, 56 and 56A and new products heretofor unavailable were provided either by Western Electric or purchased from other suppliers such as Nippon."

The Bell System and Michigan Bell have always attempted to provide services wanted or needed by customers.

(3) "Installation and maintenance intervals were shortened through interdepartmental agreements in various areas and billing, order accuracy, and other measurements were instituted, and a crash program to identify, qualify and contact potential interconnect customers was mounted. (Exhibits 57, 58 and 59.)"

Prior to the advent of competition, Michigan Bell was involved in market qualification and analytical studies on a continuing basis. Evidence of this is the volume of business sales contacts made in 1967 and 1968. (Michigan Bell Exhibit 25) Once competition became active in these markets, it was only natural for Michigan Bell to be aware of what customers it was losing and in what markets. This information was then used to identify the most vulnerable markets from both a line of business and a terminal or hardware point of view.

(4) "In-depth consulting was provided, in a manner never used before (Exhibit 60) to keep customers from retaining consultants who might recommend interconnection."

In-depth or total consulting services has always been Michigan Bell's marketing objective. Therefore, it certainly would remain so in working with customers contemplating purchasing or leasing equipment from a different source. All of the data and studies mentioned in Exhibit 60 were available to Michigan Bell customers prior to the advent of competition.

Further, a look at Mr. Fox's own Exhibit 77 shows that Michigan Bell does not make an effort to keep customers from retaining consultants who might recommend interconnection. Exhibit 77, entitled, "Relationships With Outside Communications Consultants," states:

"Some customers will want to obtain outside advice on the communications arrangement they should have and may not want to depend entirely on consultants of the Telephone Company. The retaining of an outside consultant by a customer is entirely a matter for his own business judgment. . . .

"Whether customers hire an outside consultant is a matter for their own business judgment and Michigan Bell people do not make any statement or inferences derogatory in any way of outside consultant services. . . .

"Once the company is satisfied that an outside consultant is authorized to represent a customer in connection with his communications services, the company accepts orders from and deals with the outside consultant in the same way it would accept orders from and deal with officers or employees of the customer."

(5) "Salesmen and their managers were measured on the basis of 'wins and losses' rather than increased revenue."

There is not one shred of evidence submitted by Mr. Fox to support this statement. Exhibits 60A and 60B are simply letters from salespeople to their supervisors advising as to what was happening in their areas. This was not a management requirement or policy of Michigan Bell.

Page 28

(1) "Physical inventories of installed services on customers premises were begun and in many cases back charges dropped if there was a competitor involved as happened at Steelcase, Inc., in Grand Rapids."

In 1969 Michigan Bell established a program contemplating a physical check of all multiline accounts every three years. The basic policy with regard to collecting underbilling amounts revealed by a physical check and crediting over-billing is covered in the Business Office Practice, Part II, Section III which is attached as Michigan Bell Exhibit 25. The procedure does not provide for dropping of back charges.

With regard to Steelcase, Inc., Michigan Bell marketing records do not reveal any transaction or negotiation with this customer that resulted in waived or unbilled charges. There have been no orders involving termination of equipment under contract for at least the last six years, and no salesperson connected with this account can recall any such billing or non-billing action.

Installation and Repair Departments have reviewed their history of customer activity since October, 1973, and they have no record or physical inventory checks that would result in billing adjustments during that period, nor do they have knowledge of this being done prior to October, 1973, although the records available before then were not complete.

The Commercial and Accounting records show a number of adjustments of a de minimus nature which are set forth in Michigan Bell Exhibit 26.

(2) "... computerized WATS studies were introduced, ostensibly to demonstrate how a customer could trim his long distance costs thereby insuring customer loyalty even though in-house studies proved the customer's total billing increased by 17% ninety days following WATS installation due to increased

usage. In short, it was a 'new ball game' and the rule was—shut out the competition."

In 1961 Michigan Bell instituted a program to study customer's toll. The program was called "Line Switching Study" and was done manually. In mid-1969 Michigan Bell started the mechanized WATS study which was computerized. In any event, what does the fact that WATS studies are "computerized" have to do with shutting out the competition? Mr. Fox fails to enlighten us.

(3) "In 1972, Michigan Bell Telephone Company embarked on an extensive advertising and 'P.R.' program designed to halt interconnection at the direct and indirect expense of the consumer. The Michigan media was flooded with commercials against private equipment such as the radio spots shown in Exhibit 61."

A reading of Mr. Fox's own exhibit shows that there are no statements directed against competitors or in any way disparaging them or their equipment. Michigan Bell's policy is to reflect the quality of leadership and tell its story. Michigan Bell Exhibit 27 is the statement of Michigan Bell's advertising objectives for business systems for the years 1973 and 1974, which confirm that disparagement of the competition or its products is not Bell policy.

(4) "To deny the telephone company the right to engage in such a campaign would not put them at a competitive disadvantage since prospective interconnect customers must ask the telephone company for a copy of their service billing record on the basis of which a proposal by the private distributor is made."

This is a non-sequitur. Even if Michigan Bell did engage in massive anti-interconnect advertising, which it does not, (Michigan Bell Exhibit 28) it would have nothing to do with the fact that the customer must ask the telephone company for a copy of his service billing record.

In the event the customer does ask for a billing record (presumably wishing detail such as number of minutes of each call), Michigan Bell naturally would follow up since the customer might want the billing record for any one of a number of reasons, including a contemplated change in his telephone equipment. If the customer indicated that he had a contract to obtain his own equipment, Michigan Bell, of course, would not pursue the matter. If he did not so indicate, certainly there could be nothing illegal or unethical about discussing his equipment with him.

(5) "Use by a public monopoly of funds derived from the rate-paying public, including interconnect suppliers, to advertise in direct competition with private industry is completely unfair."

While this may seem to be logical at first blush, upon consideration one realizes that it is untrue. If Michigan Bell can promote the sale of this kind of vertical equipment, which contributes to the maintenance of lower prices on basic exchange services, it is definitely in the interest of all of the rate-payers and is more than fair, it is essential.

Page 29

(1) "An 'educational campaign' was launched by Michigan Bell stating that the result of interconnect would be an increase in the price of phone service to most of Bell's customers because, the company will have to charge more to make up for the lost revenue (Exhibit 62)—an entirely unfounded position."

Mr. Fox's statement is entirely unfounded. Further, Mr. Fox apparently would deny Michigan Bell the right of free speech and prohibit Michigan Bell from having the opportunity to make its side of the issue known. Certainly, the Constitution of the United States has never been interpreted to permit those on one side of an issue to say whatever they choose, while the other side is prohibited from stating its position.

(2) "Michigan Bell Telephone Company frequently used and continues to use half-truths in presenting their proposals. A typical example is the misuse of their "General Maintenance Curve". The chart relates to crossbar (electromechanical) PBX's in use during the late 950's. It has no bearing on modern Crossbar equipment or in particular, solid state systems as stated in the Bell competitive training manual (Exhibit 65.) Yet, Bell salesmen and managers use this chart daily to convince prospective customers that their maintenance costs on solid state and modern crossbar systems meet or exceed the AT&T findings as shown on Exhibit 63, a proposal for solid state system made by our company."

This is a half-truth. Exhibit 65, which makes reference to a cross-bar maintenance curve, is *not* the one used in Michigan Bell Telephone Company training. The maintenance chart which is included in Exhibit 66 is a copy of the one which is used in the Michigan Bell training course. This maintenance curve is appropriate to new Bell cross-bar systems.

(3) "Another common practice used in Bell proposals is to question the financial strength of the interconnect suppliers by using a brochure entitled 'Plain Talk About Communication Proposals and How to Compare Them,' (Exhibit 67)."

This brochure has *never* been used by Michigan Bell. Further, it has always been stressed that Michigan Bell salespeople will not disparage the competition. Michigan Bell's marketing training course in effect since 1971 sets forth, on a page entitled "Things Not to Do (Thou Shall Nots)", the corporate policies against "unhooking", against defaming the competition, and stressing the need for fair cost comparisons as well as providing service to customers having their own equipment on an equal basis with customers having Michigan Bell equipment. (Michigan Bell Exhibit 29).

(4) "From here, the Bell salesman produces a recent Dunn and Bradstreet report on the interconnect supplier and supplements the report with rumors he has recently heard. In fact, this is the very tactic being used by Indiana Bell as pointed out later in my testimony. This practice was widely used while I was still employed by Michigan Bell, the effect of which is shown on Exhibit 68.

Exhibit 68 does not show that Michigan Bell used any such practice. The statements in this Exhibit are purely the writer's own interpretation of a conversation in which two Michigan Bell representatives and three of the customer's representatives were present. During the course of the conversation the customer asked questions about the longevity of suppliers of telephone equipment, based on information he had received in his travels around the country. The Michigan Bell reply was that, "the industry was new, there is little experience available to make predictions and that many new companies were starting, but undoubtedly there would be some business failures." Michigan Bell Exhibit 30 is an affidavit by the Michigan Bell representative at the meeting which apparently prompted Exhibit 68, setting forth the facts as to that meeting.

Page 30

(1) "Financial comparisons in proposals are presented by Michigan Bell Telephone Company with the aid of a computer print-out as shown on Exhibit 69."

Michigan Bell uses financial comparisons when the required cost figures are available, to assist the customer in making a reasonable business decision when considering privately owned equipment. Over the past years, starting as early as 1960, Michigan Bell has used various methods in assisting customers in making comparisons. Initially we used a simple arithmetic calculation based on percentage of cost and merely added these figures up. Later we began and do use a relatively simple computer program via commercial share time computer, so that these analyses are even more representative and can reflect both pre-tax and post-tax positions. The program used by Michigan Bell plays no favorites, and as stated in the Michigan Bell publication *Tic-lines* used as Exhibit 64 by Mr. Fox:

"And there's nothing more impartial than the computer." Dailey added. "If the cost of the competitor's equipment is less than the cost of ours, it will say so in plain English on the printout."

(2) "... we are not financially able to utilize a computer ourselves. ..."

The cost of developing such a computer program is nominal and the cost per individual use is relatively low (about \$4.00). TPI in fact does the same kind of comparisons. On April 25, 1974, Donald McKersie, President of TPI, told David F. Bartz, a General Staff Supervisor of Michigan Bell, that TPI was now using a financial analysis program developed by a certified public accountant for them. He said that they felt their program was as good or better than the telephone company program and less confusing and easier for a customer to understand. (Michigan Bell Exhibit 31)

(3) "Michigan Bell Telephone Company insists that leasing of their equipment versus ownership of ours is always economically advantageous even though their own practice, as shown on Exhibit 70, is to own capital assets whenever possible."

Exhibit 70 on its face shows it is not a Michigan Bell policy statement, but rather an AT&T policy statement. Further, it states that buildings, motor vehicles and equipment should be owned "except when justified on an economic analysis," and with regard to equipment there is a specific exception in the letter: "equipment should be owned except for unusual conditions such as those relating to business machines."

(4) "When the computer shows the private system to be only a few dollars more and the customer indicates he is going to buy, Bell resorts to other means such as stating an area is going to measured service and the extra income will reduce the equipment billing as shown on Exhibit 68."

Michigan Bell does not have such a practice. Michigan Bell Exhibit 30 shows that in the conversation apparently referred to in Exhibit 68, Michigan Bell representatives did not make any such statements, and that those statements regarding measured service that they did make were in response to specific questions of the customer.

(5) "In the case of non-profit institutions such as Calvin College and others, a threat of no further grants is made. In one instance, the Battle Creek Michigan 'Y', Bell actually asked for their grant back after the customer bought our system."

As shown by the attached affidavit from the Director of the Battle Creek Michigan YMCA, Michigan Bell made no such request, and, in fact, gave the "Y" \$6,000 after the purchase of TPI equipment. (Michigan Bell Exhibit 32) The Vice President-Finance of Calvin College stated to the Detroit Free Press Reporter that Michigan Bell made no such threat to Calvin College. (Michigan Bell Exhibit 5)

Michigan Bell has supported the Michigan Colleges Foundation since 1955. This is a federation of 16 private colleges including Albion and Calvin Colleges. The funds given to this foundation are allocated to the colleges by the foundation for operating funds. In addition, Michigan Bell gives grants to the capital funds of individual colleges, depending on the request of the college and the financial condition and circumstances of Michigan Bell at the time. Attached is a list of contributions to the Foundation by Michigan Bell since 1955 and grants to the specific colleges since 1958. The latter clearly shows that the specific grants were of a sporadic nature and were spread among the 16 colleges. (Michigan Bell Exhibit 33)

(6) "In one such case, MANSCO Supply Co., Grand Rapids, the customer was told if he bought interconnect, a termination charge would apply. However, if he took the system from Bell, they would drop the termination charge. The savings by changing without a termination charge was over \$250.00 per month, so he took Bell's offer."

Mansco paid a \$632.55 termination charge as required by tariff, which was billed to him when his Series 300 system was changed to a Series 100 system using the same switching vehicle. A copy of the service order is attached as Michigan Bell Exhibit 34.

Page 31

(1) "There were numerous incidents like this and others while I was employed by Michigan Bell Telephone Company and continue to be at this date."

This is simply a self-serving statement for which he has submitted not a single item of proof.

Termination charges, or any other charges authorized in Michigan Bell Telephone Tariffs, must be billed to the customer. Termination charges, as any other charges provided for in our Tariffs, may be adjusted for various reasons. Such adjustments are generally the result of customer claims. Adjustments originated by Michigan Bell Telephone are generally the result of overbilling discovered by the Company. Michigan Bell's adjustment policy is covered in the Business Office Practice, Part II, Section 5, Claims and Adjustments. (Michigan Bell Exhibit 35)

Throughout Michigan Bell's sales training, emphasis is placed on the inviolability of our tariffs and the need to adhere to them at all times. All sales rep-

ple are specifically instructed that no "special deals" are possible for any customer under any circumstances. (Michigan Bell Exhibit 36)

(2) "Bell counters this in their proposals by stating the features are not of value if they do not have them, as shown in Exhibit 66."

Exhibit 66 is a Michigan Bell proposal to a customer. In this proposal Michigan Bell recommended services to a customer based on need. For example, there are features that were offered by the competitor that Michigan Bell could have offered (e.g., consultation hold). However, based on reviews of the customer's requirements, Michigan Bell could not uncover a need for these services. As a result, this was called to the attention of the customer, and not included in the recommendation.

The three basic principles of Michigan Bell selling policy are set forth in Michigan Bell Exhibit 37:

1. Only if the customer obtains added value should he buy.

2. Only if the value continues will the sale last.

3. Only if the sale lasts will it be to the benefit of the customer and the telephone company.

(3) "If they cannot convince a customer on this point, they state they are going to offer the same services shortly at half the price of our proposal. The customer in Exhibit 68 held off his decision for two years on this tactic."

Nothing in Exhibit 68 would support such a statement and it is not Michigan Bell policy, since Michigan Bell cannot offer a service without tariff approval.

(4) "In this same area, Bell frequently touts new services, real or merely some salesman's fantasy, to keep a customer from accepting our system, as is shown on Exhibit 72."

The study referred to in Exhibit 72 was begun in April, 1972 at the impetus of a group of hospitals in Detroit who feel that there should be a lower rate for patient telephones than for administrative telephones. The study is designed to review centrex station usage to determine if there is a difference that would warrant review of the present rate for patient telephones. Since Michigan Bell previously had presented a Centrex proposal to Mt. Carmel Hospital, it was felt that Michigan Bell should advise the hospital about the study, because it could have an effect on the costs presented in that proposal. At no time did Michigan Bell say or imply that the study would mean a rate reduction. Exhibit 72 itself clearly states only that the results of the study may give Michigan Bell "reason to consider a different rate for the patient telephone." Exhibit 72 was confirmation in writing of the fact that there was a study underway.

(5) "Gaining approval as a Bell salesman for a 'special assembly' was virtually impossible prior to interconnect. Following interconnect tariff approval in 1970, the entire procedure for gaining 'special assembly' quotations was revamped in order to shutout competition."

In the first place the Michigan Bell Planning Department has handled from 2,000 to 3,000 special assembly requests every year since at least the early 1960's. Secondly, while procedures regarding special assembly requests were modified in February of 1970 and February of 1972, the attached procedures outlined in the Marketing Department Sales Information Series, Issues 319B and 319C, reveal that the changes were only for improved flow, handling and control. (Michigan Bell Exhibits 38A and 38B)

Page 32

(1) "Further, many special assemblies were offered at standard tariff rates when a customer insisted he needed a feature proposed by a competitor. A good example of this was the building of a busy lamp display in a speaker-phone housing similar to a unit offered by Stromberg-Carlson but only charging the customer the rate for individual busy lamps."

First, it is impossible for special assemblies to be offered at standard tariff rates because, if there are standard tariff rates then there is no special assembly. However, there are cases where a special assembly is made up of some piece parts for which there are tariff rates and some special arrangements for which there are no tariff rates. In such a case, the special assembly is offered at a price which is the total of the tariff rates for the tarified piece parts plus the special arrangement charges.

Secondly, as to the example of the "busy lamp display," it is not a special assembly. It was a gradual development for the convenience of customers as well as for Michigan Bell. When customers requested more than one or two busy lamps, it was easier and cheaper for Michigan Bell from a labor standpoint to put them in a speaker-phone housing than to individually wire and place on the customer's desk a number of individual beehive lamps. The customers also found this to be more desirable. Thus, what Michigan Bell did was use existing lamps and keysets, put them in a speaker-phone housing, charging for each lamp at the same rate that is charged for a beehive busy lamp. There is nothing anti-competitive about it.

(2) "Prior to 1970, sale of the features of toll diversion or long distance restriction to a customer other than hotels—motels, required a letter of explanation to upper management and a three year contract as it cut Bell's long distance revenue."

Toll diversion service is provided to customers that request it pursuant to Michigan Public Service Tariff No. 2, Sheet 41-42.2, as facility conditions permit. Therefore, it is necessary for the salesman to verify the availability of facilities with the Engineering Department prior to committing a service date to the customer, as shown by the second page of the Dial PBX Processing Manual section on Toll Diversion which is attached as Michigan Bell Exhibit 39. (Mr. Fox submitted only page 1 of the 3 page Section of the Manual.) There is no requirement of a letter of explanation to "upper management" in the Manual and Michigan Bell in fact had no such policy.

The requirement of a three-year contract certainly cannot be anti-competitive. If Michigan Bell did not want a customer to have toll diversion, obviously it would not have asked him to sign a three-year contract.

(3) "Several sales of this nature, and a salesman was labeled non-profit oriented and generally found himself at the bottom of the promotion list. This policy is indicated on Exhibit 73."

There is no policy at Michigan Bell of labeling a salesman "non-profit oriented" or putting him "at the bottom of the promotion list" for selling toll diversion. There is no proof offered by Mr. Fox and it is so absurd that Michigan Bell would have no way of even countering it. Contrary to Mr. Fox's statement, Exhibit 73 does not so indicate.

(4) "To assemble a competitive proposal, it is necessary that we first obtain certain information regarding a prospective customer, such as the Service Billing Record, in order to properly analyze and advise the customer of his communications needs and to present a proposal which we feel will best meet these needs. This information can only be obtained from Michigan Bell."

Michigan Bell's practices following a request for the customer's service billing record are set forth on pages 50 and 51 above.

Page 33

(1) "Any customer request for interface information resulted in the same reaction. The customer was forced to provide his name, telephone number, etc., which was entered on a form (Exhibit 74) and a copy immediately given to the Sales Manager."

The form referred to in Exhibit 74, which was part of Michigan Bell's Commercial Practice, was to permit interconnection before tariff rates had been established and in no case was Marketing called in. Page 2 of Exhibit 74 states that the original was to be forwarded to the General Pricing Supervisor and one copy retained in the Business Office file. This contradicts Mr. Fox's statement that a copy was given to the Sales Manager. This practice (Exhibit 74) was eliminated effective December 15, 1972, and the form referred to therein is not currently used.

(2) "This practice is not unique to Michigan Bell, as shown on Exhibit 75, an excerpt from Southern Bell's training manual."

Obviously Exhibit 75 has nothing to do with Michigan Bell.

(3) "Michigan Bell has indoctrinated their 31,000 employees as to the competitive threat of interconnect. Exhibit 64."

Exhibit 64, which is a copy of the employee newsletter, *Tie-lines*, presented to all Michigan Bell employees the facts regarding the new world in which they would be living. This is a legitimate means of presenting information of interest to all employees.

(4) "Whenever any installer, repairman, or other employee learns a customer is considering interconnection a form is submitted (Exhibit 76) or a call to a competitive hotline is made."

Michigan Bell in some districts does have a special telephone number for receiving sales leads, but Michigan Btl does not ask its employees to do anything illegal or unethical. Michigan Bell simply requests that should an employee learn that a customer is considering changing his equipment system, information of this nature is helpful and can be transmitted through the "hotline", so that Michigan Bell may also have the opportunity to tell its side of the story.

(5) "These employees are also used to discredit consultants (Exhibit 77.)"

Contrary to Mr. Fox's assertion, Exhibit 77 clearly tells Michigan Bell employees, "do not make any statement of inferences derogatory in any way of outside consultant services."

Page 34

(1) "In turn, the salesman attempts to demonstrate to the customer that Bell consultants are professionals, would not recommend the change and directly or indirectly encourages the customer to use Bell services."

Obviously, Michigan Bell sale people are supposed to try to sell Michigan Bell services, but they do not in any way imply that they are "professionals" or attempt to run down an independent consultant or the competition. Michigan Bell's policy with regard to situations where customers have entered into contracts with outside vendors or consultants is covered in Sales Information Series, Issue 752, which provides specific guidelines for sales contact personnel to assure ethical handling of situations where they learn that a customer has entered into a contract with an outside vendor or a consultant. (Michigan Bell Exhibit 40).

Page 35

(1) "Although there have been numerous incidents of the telephone company communicating with our clients after we have obtained a signed contract, for the sole purpose of trying to convince these customers to break their contracts and return to the Bell fold, there is one instance that stands out very vividly in my mind."

As shown in the SIS No. 752, Exhibit 40, this is contrary to Michigan Bell policy and practice.

(2) "In this particular case, which involved two contracts approximating \$140,000 awarded to my company by Westdale Realty Company, Michigan Bell Telephone Company contacted the customer after our contract was signed to advise them that the telephone company had recently filed an application with the Michigan Public Service Commission to restructure its rates, and, as a result, the rates to this customer would be lower than quoted to the customer at the time of the competitive bids submitted by my company and the telephone company. Naturally the customer was interested in the prospect of lower rates from the telephone company but advised the Michigan Bell representative that it was already under contract to our company. This, however, did not concern the Michigan Bell representative, who the next day brought to this customer a form request prepared by Michigan Bell, inviting the telephone company back in to make another proposal. As a result of this deliberate effort on behalf of Michigan Bell my company lost this \$140,000 contract."

Michigan Bell Exhibit 41, a sworn statement from Mr. Leonard L. Westdale, completely contradicts Mr. Fox's version of the facts regarding this case. The facts are as follows:

Michigan Bell was advised that this customer had signed a contract with TPI for its main location and several branch offices. Michigan Bell pursuant to its policy of confirming the existence of contracts (having been told on numerous occasions that a vendor had a contract with a customer, when he did not) spoke with Mr. Westdale, who advised that indeed they had signed a contract, but he had arranged for a one year discount and buy back agreement for the branch offices. He indicated to our salesman that another competitive supplier had made a proposal which was \$30,000 less than TPI's and that situation was still unresolved.

Subsequently, the customer by letter stated that he wished Michigan Bell to provide a proposal for the telephone communications equipment at all locations

in the Grand Rapids area. (Michigan Bell Exhibit 42) Over a month later the customer advised our salesman that he had decided to "hold" on the installation of equipment until the Michigan Bell rate case was resolved. (Michigan Bell Exhibit 43) Over one year later Michigan Bell received a letter advising that Westdale Realty Company had formally agreed to purchase a communications system from Custom Telephone Communications System, Inc. (Michigan Bell Exhibit 44)

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(1) "This contract was part of a similar program instituted by Michigan Bell after its rate restructure case was filed to contact all customers in a competitive situation to advise them of the potential decrease in their rates which would result from the newly filed rate case with the hopeful, and I must add, successful effect of drying up sales and customer termination of contracts with interconnect companies, as shown in Exhibit 77A."

Exhibit 77A outlines a program to report customer reaction to the rate restructuring request. It involved contact with all accounts that might be repriced, whether upward or downward.

Further, Michigan Bell people who might have occasion to discuss a customer's potential rate under the proposal were instructed to make it clear that the rates had to be approved by the Michigan Public Service Commission, and that they might be approved as proposed, they might be changed to be higher or lower or they might even stay the same. (Michigan Bell Exhibit 45)

(2) "Further harassment and threats of loss of business have been made to our prospective customers by utilizing lists of suppliers of goods and services and the amounts of money spent in various cities and towns in Michigan. (Exhibit 78.)"

Michigan Bell for many years (long prior to the advent of TPI or any other interconnect companies) has supplied to the local Commercial managers these lists, which are intended to show that Michigan Bell is a local company which contributes to the local businesses. Exhibit 78 was intended only for that purpose, and was not intended to suggest that Michigan Bell would take away business from a customer who purchased interconnect equipment. That is not Michigan Bell policy. Michigan Bell policy in this regard is indicated on the attached Information Break (Employee Question and Answer form) published in June, 1974. The question asked, "Why does Michigan Bell continue to hold activities such as bowling at places that do not use Bell telephone equipment?" The answer was: "Michigan Bell selection of facilities and services of outside companies is based solely on quality, service and price. The type of telephone equipment used by a company has no bearing on our decision." (Michigan Bell Exhibit 46, Page 2)

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(1) "Michigan Bell Telephone Company management and hourly personnel have been encouraged to 'boycott' firms with private systems such as Orson E. Coe Pontiac, and Vandenberg Buick in the Western Michigan area."

The attached letter from Mr. Orson E. Coe clearly shows that Michigan Bell people, including the salesman who lost the account, have purchased cars from Orson Coe Pontiac since his purchase of TPI equipment. (Michigan Bell Exhibit 47).

Michigan Bell has been able to uncover no evidence of a statement of boycott regarding Vandenberg Buick. Mr. Fox has made no identification of the supposed person who stated that Michigan Bell and its employees do business with those firms that do business with Michigan Bell. We presume if he knew who it was, he would have stated the name and that person would have been able to respond. It is Michigan Bell's policy that where employees make their personal purchases is of no interest to the company.

(2) "During my employment with Michigan Bell Telephone Company, several employees who resigned to take advantage of opportunities offered in the interconnect industry were labeled 'not for rehire'."

Michigan Bell would generally not anticipate rehiring employees due to possible ethical and legal considerations. However, there is no "not for rehire" label, which comes automatically with leaving Michigan Bell to join an interconnect company. In several instances such persons have been re-hired. For example, a former salesman in Grand Rapids, who went with an interconnect

company is now employed in the Michigan Bell Plant Department in Grand Rapids; several installers in Grand Rapids who left to join interconnect firms have been re-employed in their former capacities; a former General Telephone Company employee who left them to join an interconnect company has been hired as a sales representative in Saginaw. Each case would be reviewed on the basis of the circumstances, including why the person left Michigan Bell originally, his performance while in Michigan Bell's employ and why he is leaving his present employment.

(3) "For example, our company made a sale to VanEss Construction Co., Grand Rapids, Michigan some two years ago. The VanEss firm did much of the underground construction work in Western Michigan for Michigan Bell. Upon learning of the customers decision to interconnect, the Bell employee responsible for issuing purchase orders for construction work called the customer and advised such customer that it would not be receiving any further Michigan Bell contracts. In an effort to remove the customer from the 'middle' of a clear cut legal suit, and to prevent other potential customers from finding out about Bell's vindictive practices, we allowed the customer to terminate his contract with us."

The attached affidavit from the Treasurer of the VanEss Construction Company clearly shows that this customer made the decision to cancel his contract with TPI on his own observations, and that he was never intimidated, coerced or threatened with loss of contracts from Michigan Bell or its employees. (Michigan Bell Exhibit 48) Mr. Fox's statements are pure fabrication.

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(1) "Often due to a building's construction, it is to the interconnect supplier's and customer's advantage to purchase Michigan Bell cable already in place. However, Bell apparently is not interested in selling such cable as shown in Exhibits 37 and 79 and as repeatedly shown by their actions and policies."

Exhibit 37 is the part of Southern Bell Training manual submitted by Mr. Fox, which obviously has no relevance to Michigan Bell activities. Exhibit 79 is a Sales Information Series dated July, 1970, which is no longer in force and which stated merely that sales of cable facilities "should not be stimulated."

Current Michigan Bell procedures regarding possible sale of Michigan Bell Telephone facilities are outlined in Sales Information Series, Issue No. 696A, (Michigan Bell Exhibit 49). This Series states that Michigan Bell will sell Company owned in-building plant facilities, under certain circumstances, to customers who elect to provide their own communications equipment. The decision as to whether Michigan Bell will or will not sell its facilities is generally related to whether or not other services which Michigan Bell would continue to supply are carried in the same facilities as the station equipment which the customer is replacing.

(2) "For an example, a charge is levied by Michigan Bell to inventory such cable and quote a sales price, even though other Bell companies do not levy such a charge. (Exhibit 80.)"

This is a minimal charge (usually \$50-\$120) only to cover the cost of making the inventory.

(3) "Of some 400 installations in Michigan, we have purchased Bell cable facilities in less than five percent of the cases due to Bell's practices causing abandonment of thousands of dollars of material to the expense and detriment of the rate paying public.

Michigan Bell Exhibit 17 shows that Michigan Bell has sold over \$99,070.85 of its cable to others.

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(1) "When leased cable facilities are requested from Bell, dates quoted for delivery for the Bell proposal suddenly change as indicated in Exhibit 81."

Michigan Bell Exhibit 50 is a sworn statement from the Vice-President of the Company referred to by Mr. Fox, which shows clearly that Michigan Bell advised the Customer that quoted interval for installation of cable facilities was the same regardless of whether the equipment was provided by Michigan Bell or the customer, and that the facilities were installed within the quoted interval.

Michigan Bell Exhibits 51 and 52 are letters in response to Exhibit 81, which show clearly that it is Michigan Bell's policy to make every effort to meet the customer's requirements and that the fact that he chooses to interconnect a private system in no way changes Michigan Bell's priority in providing Central Office facilities.

(2) "For example, we recently sold a private system to Wayne County Catholic Social Services, Detroit, Michigan that required eighteen leased circuits. Bell's policy had always been to terminate their leased circuits at the point designated by the customer. On the day before the system cut-over, Bell advised us that the above was no longer going to be their policy. Thus, the cut-over was delayed one week while we completely re-wired the building. To date, we have never received written confirmation of this policy change."

As shown by the attached affidavit of Michigan Bell Telephone Company's Special Action Coordinator-Competitive Services, the facts are that Michigan Bell Telephone Company expended a great deal of effort to coordinate and expedite this cutover, including several discussions by the Coordinator with Mr. Fox, who seemed entirely satisfied. Contrary to his statement, they did not have to "completely rewire" the building, since Michigan Bell sold them its cable facilities for \$50.00. (Michigan Bell Exhibit 53)

Further, written confirmation of Michigan Bell's policy regarding terminating of channel service was given to Mr. Fox on April 17, 1974. (Michigan Bell Exhibit 54)

(3) The 30-day summary attached as Exhibit 82 purporting to show a "Bell-caused" problem on 80% of TPI's cutovers is not a representative sample and shows no such thing. It is a self-serving document, which does no more than list alleged problems. Further, Michigan Bell's Special Action Coordinator-Competitive Services met with Mr. Fox on February 19, 1974 to discuss these cases, at which time Mr. Fox stated that they were "water over the dam" and that he was more concerned about the future. The Michigan Bell Coordinator assured him that the cases were being reviewed by the Plant Department to prevent any future happenings. Michigan Bell Exhibit 54 is a written response by the Coordinator to Mr. Fox regarding the requests he made at that meeting for, (1) a standard letter from suppliers to order connecting arrangements, (2) a letter of policy on terminating of channel service, and (3) a Division Coordinator to handle installation arrangements. Michigan Bell Exhibit 55 is a standard connecting arrangement order form prepared in response to Mr. Fox's request and given to him prior to his testimony. As stated on the previous page, Michigan Bell's policy regarding terminating channel services was supplied on April 17, 1974. (Michigan Bell Exhibit 54). Division Coordinators to handle installation requests have been appointed in two Divisions and the Special Action Coordinator has agreed to act as such in the remaining Division on an interim basis.

(4) "Scare tactics" are also employed to our competitive disadvantage. For example, a Bell engineer visited the Charles Strelinger Company in Warren, Michigan, prior to our system cut-over. While there, he told the customer that on the night of cut-over for Bond-Bilt Construction (another of our customers), Michigan Bell installers worked without pay chopping up our cable, thus, causing the customer to go without service for one and one-half days."

Bond-Built Construction was a customer of Gale Communications, Inc. not TPI. Further, all Michigan Bell engineers involved with this project were questioned. They deny that such a statement was made. Mr. Gary Pepper, the employee for Strelinger who coordinated the cutover, stated to a Michigan Bell employee on June 28, 1974, that, while there were some problems during the cutover, there were no threats and no engineer made the statement as Mr. Fox claimed.

NOTE REGARDING MICHIGAN BELL EXHIBITS TO ATTACHMENT T OF STATEMENT OF
FRANK A. McDERMOTT, JR.

Michigan Bell exhibits 1-54, referred to in the response of Michigan Bell Telephone Company to the statement and testimony of Ronald B. Fox, are not attached to this statement, but are being filed separately with the subcommittee.

ATTACHMENT U—SPECIFIC ALLEGATIONS PLACED IN THE RECORD

Submitted by	Customer name, location, and operating telephone company	Allegation	Response
RECIPROCITY			
Business Communications Systems, Dec. 5, 1973.	Athletic Club SPA, Salt Lake City, Utah; Mountain Bell.	Employees instructed by Bell to quit using facilities when club went COAM. Posted notice to that effect.	Mountain Bell denies the allegation and is not aware of any notice being posted.
Do.	Marion Wiley Ford, Bountiful, Utah, Mountain Bell.	Mountain made deal to purchase cars if customer stayed with Bell in 1972.	Mountain Bell asked Wiley to bid 10 times on cars in 1973 and 15 times. Wiley refused bid 21 times and was too high on bid 4 times. No evidence of reciprocity.
Do.	Tanner Jewelry, Salt Lake City, Utah; Mountain Bell.	Afraid if interconnect Bell might quit buying service emblems et cetera from them.	MB denies allegation. This was never a competitive case.
Do.	Wheeler Machinery, Salt Lake City, Utah; Mountain Bell.	Lost \$30,000 to \$40,070 of Bell business to International Harvester when Wheeler Machinery bought their own system.	Mountain Bell bought tractor from International Harvester because of lower bid. Mountain Bell ordered \$48,000 tractor from Wheeler in May for delivery in August. Customer interconnect approximately 1 year prior to purchase of tractor.
Do.	General; Mountain Bell.	"Enemies list" circulated by Mountain Bell in Salt Lake.	Mountain Bell Management have no knowledge of an "enemies list."
Century Business Communications Inc.	Cash Wholesale, Little Rock, Ark.; Southwestern Bell.	Cash Wholesale was told by unnamed Southwestern Bell employee that no Bell employees would patronize stores operated by Cash Wholesale. November 73.	Southwestern Bell has no knowledge of allegation.
Do.	Don Pfeifer of M. M. Cohn, Little Rock, Ark.; Southwestern Bell.	Pfeifer was told by an unnamed Service Assistant that she was not allowed to shop at M. M. Cohn stores and that Pfeifer has received letters from relatives of Bell employees indicating they would not shop at M. M. Cohn as long as they owned a competitive system.	Do.
Florida Interconnect Telephone Co.	Leasehold Dev. Co., Miami, Fla.; Southern Bell.	Customer broke a contract with Florida Interconnect since they are building Southern Bell training center.	In pending court action docket 73-15730 in 17th Judicial Court in Broward County, Fla. Southern Bell denies the allegation.
Gulf States Telephone Co.	General; Southern Bell.	Southern Bell posted notice on union bulletin board advising employees not to do business with 15 customers who had purchased competitive systems.	CWA Union representative posted notices on union bulletin boards. Southern Bell management removed the notice when they learned of its existence.
Do.	Tharp Buckingham Gulf Service Station, Montgomery, Ala.; South Central Bell.	South Central has 155 trucks serviced at Tharp service station—Gulf States alleges that Mr. Tharp was told by South Central Bell not to service Gulf States vehicles.	South Central in Montgomery has no knowledge of this incident and denies the allegation.
Midwestern Telephone Co.	Dr. Benjamin Rosenberg, Joplin, Mo.; Southwestern Bell.	Unnamed Bell employee advised customer that if he bought competitive system that Bell employee would advise other Bell employees not to use the Doctor's services. February 1974.	Southwestern Bell has no knowledge of allegation.

- Sound, Inc. Mar. 6, 1974... Des Moines Dodge, Des Moines, Iowa; Northwestern Bell.
Do..... First National Bank, Marion, Iowa; Northwestern Bell.
Do..... Fred J. Gibson & Co., Cedar Rapids, Iowa; Northwestern Bell.
Sound, Inc..... Grotz-McKay Realtors, Des Moines, Iowa; Northwestern Bell.
Do..... Internal Medical Clinic, Des Moines, Iowa; Northwestern Bell.
Telecommunications Systems of America. Holiday Inn Eastex, Houston, Tex.; Southwestern Bell.
Telephone Service Company of America. Hyatt House, Birmingham, Ala.; South Central Bell.
Telecommunications Resources. Salvation Army, New York City; New York Telephone.
United Telecommunications, Inc. Scautub Insurance, Schenectady, N.Y.; New York Telephone.
Telarent Leasing Corp..... Helmo Motor Co., Raleigh, N.C.; Southern Bell.
Universal Communications System, Inc. Hilton Inn, Burlington, N.C.; Southern Bell.
Do..... Colonial National Bank, Roanoke, Va.; Chesapeake & Potomac.
Do..... Pitzer Transfer & Storage, Roanoke, Va.; Chesapeake & Potomac.
Tough Notes Unidentified. Republic Bank & Trust, Pueblo, Colo.; Mountain Bell.
- Call from Bell threatening loss of business if customer went interconnect.
Notice posted on bulletin board advising employees not to do business with First National.
Lost business from Bell employees after interconnect.....
Bell personnel asked if customer was upset over lack of Bell employee home sale listings.
Northwestern Bell told employees that customer had interconnect. One employee sent notes with payment stating "what you did to the company I work for, I did not like."
Southwestern Bell had 40 employees in motel who told customer if he installed COAM they would move out. Customer delayed cutover until they had left. Sept. 14, 1973.
South Central entered into reciprocal agreement with Hyatt House.
New York Telephone threatened to withdraw charitable donation if Salvation Army purchased competitive system.
New York Telephone employees purchased insurance elsewhere since his insurance company appeared on a list that New York Telephone circulated of customers who had purchased a competitor's system.
Calls from Southern Bell employees reminding customer that 60 trucks were purchased by Bell in the previous year.
Telephone Company (Western Electric) said they would not use their hotel if they bought from COAM supplier.
Chesapeake & Potomac threatened bank with removal of account if customer accepted proposal.
Claims Western Electric threatened to remove equipment stored by customer if they bought COAM.
Several Mountain Bell employees cancelled accounts after bank interconnect.
- Northwestern Bell denies any knowledge of threats.
Northwestern Bell has no knowledge that a notice was posted.
Northwestern Bell assured Mr. Gibson they did not advise employees to Boycott District Plant Manager sold a home through Mr. Gibson shortly after he ordered he ordered interconnect system.
Des Moines Marketing unaware of any Northwestern Bell personnel making such statement. Customer sold employee home thru Northwestern Bell home sale plan on Oct. 18, 1972—after interconnect.
Employee was contacted on June 28, 1974, and was not aware that the customer was interconnect. Her note referred to clinic billing Northwestern Bell instead of her for personal medical treatment.
Southwestern Bell denies making statement. Motel manager voluntarily told a Southwestern Bell employee that he would delay installing competitive system until 40 Southwestern Bell employees had checked out of the motel.
Pending anti-trust court action, South Central Bell denies making a reciprocal agreement with the Hyatt House.
New York Telephone denies implying to Salvation Army that donation would be withdrawn if they bought competitive system.
Letter sent to customer Jan. 23, 1974, and to UTC stating policy and detailing reasons that employee bought elsewhere because it was cheaper. New York Telephone has no knowledge of a list of customers who purchased competitive systems for the purpose of informing employees where to do business.
Southern Bell has no knowledge of calls being made and denies allegation.
Neither Southern Bell nor Western Electric management are aware of any statements in this regard.
Chesapeake & Potomac in Roanoke not aware of any discussion with bank in this regard.
Supervisor in charge of arranging for storage has no knowledge of such a threat.
Never received complaint from customer. Not Mountain Bell policy to avoid doing business with interconnect customers.

ATTACHMENT U.—SPECIFIC ALLEGATIONS PLACED IN THE RECORD—Continued

Submitted by	Customer name, location, and operating telephone company	Allegation	Response
RECIPROCITY—Con.			
Customer.....	Dub Miller Ford, Houston, Tex.; Southwestern Bell.	Southwestern Bell removed a company car from Dub Miller Ford before it could be serviced because they bought competitive system. Feb. 6, 1974.	Southwestern Bell's business relationship has remained relative unchanged since customer bought COAM system. Record of purchases as follows: May 4, 1973.....\$3.31 July 31, 1973.....149.00 Dec. 14, 1973.....182.00 May 6, 1974.....16.50 May 10, 1974.....18.85 June 19, 1974.....18.33 Secretary at Southwestern Bell did make a statement as alleged. Southwestern Bell's business relationship with this customer has not changed since interconnect. Recent years' business as follows: 1970.....\$701.70 1971.....0 1972.....0 1973.....220.27 Pacific Telephone & Telegraph and Pacific Telephone & Telegraph employees have continued to use Tropicana facilities since interconnect. Employees alleged to have made statements categorically deny such statement.
Do.....	International Travel Agency; Southwestern Bell.	President of International Travel alleges that H. K. Hovestock instructed secretary to cancel reservations and to inform agency that Southwestern Bell wouldn't do business with a company who wasn't doing business with them Apr. 9, 1971.	
Do.....	Tropicana Lodge, Fresno, Calif.; Pacific Telephone & Telegraph Co.	Pacific Telephone & Telegraph boycotts business since customer interconnect. Employees have stated that Pacific Telephone & Telegraph would not be using Tropicana facilities.	
HARASSMENT			
ARCATA.....	Western Machinery, Phoenix, Ariz.; Mountain Bell.	Customer wrote to ARCATA stating since interconnection LD billing was mixed up—questions whether this is revenge. October 1971.	Billing problems may have been caused by introduction of a new billing computer at about this time. Other customers were also similarly affected. There was no effort on the part of Mountain Bell to intentionally confuse the billing of any customer.
Business Communications System Dec. 5, 1973.	General; Mountain Bell.	Mountain attorney Dennis Stack—told BCS attorney "check your pocketbook to see if you have enough money to continue", relative to rate case.	Mountain Bell denies the inference that Mr. Stack's statement expressed an intent to keep BCS in court. The statement was taken out of context while Mr. Stack was indicating to the BCS attorney that there was little likelihood of a settlement of this particular issue and we were prepared to appeal if necessary to fully litigate our rights.
Century Business Communications.	Joe Sutton; Southwestern Bell.	Two unnamed Southwestern Bell employees advised Sutton that Bell could create problems for customers owning competitive systems. November 1973.	Southwestern has no knowledge of such statements by employees.
Century Business Communications.	M. M. Cohn, Little Rock, Ark.; Southwestern Bell.	Southwestern Bell forced competitor's installer to stay on job all day rather than required one-half hour. Nov. 8, 1973	Competitor nor customer coordinated with Southwestern Bell nor advised Southwestern Bell that they would install system at 9 a.m.

Communications Consultants, Inc. Apr. 18, 1974, Post Chrysler-Plymouth, Aurora, Colo.; Mountain Bell. Mountain refused to let interconnect company buy house cable or to use it to pull their cable. Mountain cut cable into 4-foot lengths.

Essential Communications Systems, Inc. Business: Incentives, Mattawan, N.J.; New Jersey Bell cut wires leading to code-a-phone. New Jersey Bell. New Jersey Bell cut wires leading to code-a-phone. Presently in hearing before New Jersey Public Utilities Commission (Case No. 739-741). No details furnished.

Do. Eastern Out Board Parts, Newark, N.J.; New Jersey Bell couplers for code-a-phone do not work. New Jersey Bell. Submitted list of 76 dates and customer names involving harassment—no details furnished.

Do. General, New Jersey Bell.

Telephone Co. Division of GCE. Fred Meyer Co., Emeryville; Pacific Telephone & Telegraph. Customer was denied repair service by Bell. Customer checked with other customers in his area and found that all had similar problems. Pacific Telephone & Telegraph came out several days later and told customer his communications would always be in jeopardy with interconnect. Customer claims call from Bell employee to Gulf States indicating calls to Gulf States were being monitored & Broadcast in Bell Central Office.

Gulf States Telephone. Southern Bell. South Central cut cable and left it in the conduits. Error in telephone listing due to Private Telecommunications Inc. efforts to compete with Illinois Bell Telephone. Bell would not allow COAM supplier to list under yellow page heading of "Telephone Companies".

Private Telecommunications Inc.; Chicago, Ill.; Illinois Bell Telephone. Northwestern Bell contacted customer after decision to go COAM—asked why he did not consult with Northwestern Bell. Employees intimidated city council regarding City Managers decision to purchase COAM.

Sound, Inc. City of Marion, Iowa; Northwestern Bell. Northwestern Bell requested to force cutover during business hours, customer requested after hours cut. Feb. 8, 1974.

Sound Inc. and by customer. Internal Medical Clinic, Des Moines, Iowa; Northwestern Bell. New York Telephone implied to customer that service would suffer if bought competitive system.

Tele-Resources. Thrift Pack Services; New York Telephone. New York Telephone denies saving or implying that quality of service would be affected if bought competitive system.

Request to plant foreman was for 150 feet of cable between buildings and not for all cable. Mountain Bell will not sell outside cable unless absolutely certain that it cannot be used for other future services. 4-foot length is the standard way to return cable to Western Electric Co. for recycling.

New Jersey Bell installer discovered a direct connection of telephone direct connection to line while working a service order. He discovered again and customer given written notification of need for connecting arrangement. Customer ordered connecting arrangement.

Customer was not denied repair service. Test made on local loop initially indicated no trouble. Pacific Telephone & Telegraph had difficulty locating trouble.

Southern Bell management has no knowledge of calls being monitored. Anyone found doing this would be violating Secrecy of Communications and would be subject to dismissal. An attempt was made to remove the cable but we were unable to do so. It had to be left in place and disabled. Main listing entered correctly. Extra listing was entered erroneously due to clerical error. Credit was given for error which was not intentional. Classified headings are established to enable the general public to best utilize the directory in locating businesses. The classification of telephone equipment and systems best describes COAM suppliers.

Northwestern Bell did contact customer and ask why he made decision without consulting Northwestern Bell. Contact made jointly with mayor who did not believe city manager had authority to purchase COAM system. Northwestern Bell unaware of any intimidation by their employees. Northwestern Bell did inform customer of normal business hour policy—negotiated premium time after hours cut—customer reluctantly accepted after hours cut which was made at 6 p.m. New York Telephone denies saving or implying that quality of service would be affected if bought competitive system.

ATTACHMENT U.—SPECIFIC ALLEGATIONS PLACED IN THE RECORD—Continued

Submitted by	Customer name, location, and operating telephone company	Allegation	Response
RECIPROCITY—Con.			
Customer-----	AMTEC, New York City, N.Y.; New York Telephone.	New York Telephone quoted due date of December 17 for inside move. When decided to go interconnect interval extended from December 17 to January 14 by New York Telephone.	Customer ordered move of call directors Nov. 19, 1973—due Dec. 17, 1973. New York Telephone was notified customer going interconnect December 10, 1973, which required 17 CA's. New York established due date Jan. 17, 1973, which is normal interval for CA's.
Do-----	Lawrence G. Brown; Pacific Telephone & Telegraph.	Pacific Telephone & Telegraph refused to correct customer address in directory. Pacific Telephone & Telegraph information would not "admit his business existed".	Customer located on highway in rural area which resulted in a disagreement with Pacific Telephone & Telegraph over North South designation. After discussion, Pacific Telephone & Telegraph listed customer per his request.
DISCRIMINATION			
Century Business Communication.	Cash Wholesale, Little Rock, Ark.; Southwestern Bell.	Bell proposal shows 10 trunks for Bell System but 15 trunks for competitors' proposal June 30, 1972.	CBC's exhibit 5-B which included 10 trunks is part of a proposal submitted April 16, 1972, and exhibit 5-C which included 15 trunks is a part of a proposal submitted June 30, 1972. Southwestern Bell based their evaluation of trunk requirements on traffic studies. The customer's requirements changed between proposals. The customer finally covered with 12 trunks not 10 as stated in allegation.
Do-----	None; Southwestern Bell	Southwestern Bell proposal seems to indicate that if customer buys competitive system he will have to pay mileage whereas if he orders Southwestern Bell 300 he won't pay mileage. June 30, 1972	Mileage costs were included in the total cost quoted in the Bell proposal. Though mileage costs were not separated in giving the total costs to the customer they are a separate charge, not included in rate.
Gulf States Telephone Co.	Top of the Gulf Corp., Panama City, Fla.; Southern Bell.	Claims Southern refused request for 3-line rotary on interconnect system. Southern said only 2 lines available. Bell representative called customer and said 3-line rotary was available if customer bought Bell equipment.	When initial call was made only 2-line rotary was available. Subsequent search provided 3-line rotary and was assigned to customer as soon as it was discovered. Southern Bell has no knowledge of anyone calling customer to make "deal".
InterTel Jan. 10, 1974.	Realty Executives, Phoenix, Ariz.; Mountain Bell.	Mountain advised Intertel touchtone was not available in area where interconnect customer was moving. Customer called Mountain Bell posing as a Bell customer and was given touchtone in same area.	Touch-tone was available in that exchange only in connection with ESS features. Intertel consultant did not order ESS features. Customer did not pose as a Bell customer.
Midwestern Telephone Co.	Dr. Benjamin Rosenberg, Joplin, Mo.; Gene Ludlow, Web City, Mo.; Southern Bell.	Unnamed Southwestern Bell employee advised customer that if he bought a competitive communications system at his office he may have a hard time getting telephone service at a new home February 1974.	Southwestern Bell denies that allegation.
Do-----	Gene Ludlow, Web City, Mo.; Southern Bell.	Southwestern Bell refused to provide temporary service when it learned that customer was considering a competitive system Jan. 15, 1974.	Southwestern Bell refused to provide temporary service in the form of allowing the customer to connect a line through the PABX of another customer—Messenger Publishing Co.—Customer then ordered two business lines which Southwestern Bell provided.

Telecommunications Systems of America.	John Hancock, Nashville, Tenn.; South Central Bell.	Customer requested touch-tone—told not available—South Central initially gave it to him.	When customer first requested touch-tone it was not available—put on waiting list—given touch-tone when it was available. Handled like any other case.
Unknown.	White and Stuele, Denver, Colo.; Mountain Bell.	Offered to install temporary equipment if Com Key 1434 not available—charged for no additional charge.	Mountain did offer to eliminate their installation charges for the temporary service. However, this is in agreement with their stated practice that management persons can waive installation charges, in situations that require temporary service due to Mountain Bell not being able to provide permanent service by a specified time.
Customer.	Tropicana Lodge, Fresno, Calif.; Pacific Telephone & Telegraph Co.	Pacific Telephone & Telegraph did not pay interest on deposit from 1962-67.	Records do not go back to 1967—Pacific Telephone & Telegraph does and did at that time pay 6 percent interest on deposits.
Do.	do.	Delay in installing private line to airport.	Service delayed due to error in service order—order was corrected and service expedited.
Do.	do.	Public telephone in lobby removed after customer interconnected.	Telephone was removed because of insufficient revenues.
Do.	do.	Customer has received excessive billing treatment since interconnecting.	During period from January 1973 through April 1973 customer made partial payments leaving considerable balance on bill. Credit reclassified resulting in appropriate treatment notices and calls.
UNHOOKING			
Executone, Inc.	Internal. Professional; Association and Menninger Foundation, Topeka, Kans.; Southwestern Bell.	Southwestern Bell marketing initiated sales activity on items on which Southwestern Bell had been informed were under a binding agreement with customer and telephone. Oct. 8, 1973.	Southwestern Bell advises that as of Dec. 17, 1973, the customer had not entered into contracts with Executone.
Gulf States Telephone Co.	Hector Manufacturing & Supply, Pensacola, Fla.; Southern Bell.	Contact made by Bell after a letter appointing Gulf States as consultant was received. Bell salesman claimed to have "something better to offer."	Proposal on 300 Series system made by Bell before receiving letter from COAM supplier.
Gulf States Telephone Co. Inc.	Thrifty Traveler, Inc., Pensacola, Fla.; Southern Bell.	Contact made by Bell employees after contract for COAM equipment had been signed and an attempt to get customer to break contract was made.	Southern had a contract for a 770 system already signed prior to COAM contract. No attempt was made to get customer to break COAM contract.
Nelron Communications Co.	Leasehold Development Co., Florida; Southern Bell.	Customer canceled contract with Nelron Communications since he might lose business with Southern Bell.	Southern denies unhooking charge—it is not their policy to induce breach of contract. Court Case 73-15730 in 17 Judicial Court—Broward County, Fla.
Private Telecommunications, Inc.	Bachi, Inc., Itasca, Ill.; Illinois Bell Telephone.	Illinois Bell persuaded customer to allow them to make a counter proposal after a contract had been signed for COAM equipment.	Illinois Bell made contract to verify existence of contract and inform customer of interface requirements and charge. Illinois Bell analyzed system and made proposal. Illinois Bell received a letter from customer requesting a study and specifically releasing IBM from responsibilities under Bachi's previous letter concerning COAM relations.
Selectron, Inc.	East Rose Medical Clinic, Portland, Ore.; Pacific Northwest Bell.	Pacific Northwest Bell salesperson contacted customer after receipt of letter indicating COAM supplier had contract. Pacific Northwest Bell salesperson subsequently made proposal and left brochures with customer.	Salesperson claims she was not aware that a contract had been signed until after the meeting with customer had concluded.
Sound, Inc., Mar. 6, 1974.	Grod-McKay, Des Moines, Iowa; Northwestern Bell.	Northwestern Bell asked customer to break contract with Sound.	Northwestern Bell Marketing categorically denies. Only verified contract.
Sound, Inc., and by customer.	Internal Medical, Des Moines, Iowa; Northwestern Bell.	Northwestern Bell asked Internal to cancel contract. Customer states that Northwestern Bell asked to see the contract.	Northwestern Bell Marketing denies asking customer to cancel but did ask to see contract.

ATTACHMENT U—SPECIFIC ALLEGATIONS PLACED IN THE RECORD—Continued

Submitted by	Customer name, location, and operating telephone company	Allegation	Response
PREMATURE ANNOUNCEMENT			
Pritec.....	Corcoran, Inc., Chicago, Ill.; Illinois Bell Telephone Co., Iowa City, Iowa	Proposal to customer on 107A dial system before tariff had been filed.	Once terms of an offering are determined IBT sales personnel can discuss with potential customers prior to a formal tariff. "195" Northwestern Bell gave customer brochures and, quoted, "195" suggested rates—advised customer rates were tentative. Mr. Diehl had told Northwestern Bell that he would sign affidavit stating we did not misrepresent. Filing was made within 5 days of discussion with customer.
Sound.....	Dr. J. Gibson, Cedar Rapids, Iowa; Northwestern Bell.	Given literature and exact rates on COMKEY 718 though no filing exists.	Mountain Bell consultants did send a letter to customer discussing COMKEY prior to filing. COMKEY had been announced nationally. Mountain Bell under their tariffs had the ability to sell it on a special charge basis.
Unknown.....	Watts and Steele, Denver, Colo.; Mountain Bell.	Advised rates on COMKEY 1131 and 1141 customer system would be available by the time they moved to location November 1973. A tariff was not filed on Sept. 20, 1973 and hasn't been filed as of July 10, 1974.	
MISREPRESENTATION			
Eastern Telephonics, Inc., Nov. 12, 1973.	Michael Rosenthal and Co., New Rochelle, N.Y.; New York Telephone.	Inaccurate financial analysis of lease versus purchase—copy of analysis along with ETI rebuttal submitted.	Both Telco cash flow as well as vendor's analysis were wrong. New York telephone error was not deliberate.
Sound, Inc.	Fred J. Gibson, Cedar Rapids, Iowa; Northwestern Bell.	Northwestern Bell quoted higher off premises rates for COAM equipment than for Bell System in proposal.	This matter was called to Northwestern Bell's attention and Northwestern Bell agreed that an improper rate had been quoted due to a misinterpretation by sales.
Tele Resources.....	Trubin Gilaks, New York City; New York Telephone.	New York salesman advised customer a Centrex would allow 100 percent simultaneous calling.	Northwestern Bell under their tariffs had the ability to sell it on a special charge basis.
DISPARAGEMENT			
Communications Consultants, Inc.	Robert Ewing—general contractor, Phoenix, Ariz. and Red Carpet Realtors, Phoenix, Ariz.; Mountain Bell.	Mountain sends letters to interconnect customers outlining problems they may encounter after interconnection.	Mountain Bell does send letters to customers advising facts concerning interconnect devices and charges. The letters do not disparage non-Bell equipment or services.
Cousino Communications.	Central Travel and Ticket, Toledo, Ohio; Ohio Bell.	Ohio Bell installer made disparaging comments while on customer premises.	Statements made to customer were not as described in Central Travel Letter. Statements that could be construed as derogatory if made to customer by Ohio Bell employee were in fact made by Cousino employee addressed to Ohio Bell employee.
Midwestern Telephone Co.	Dr. Benjamin Rosenberg, Joplin, Mo.; Southwestern Bell.	Unnamed Bell employee advised customer that Midwestern was a "fly-by-night" operation and that their customers were very dissatisfied.	Southwestern Bell denies allegation.
Do.....	James E. Brown, attorney, Joplin, Mo.; Southwestern Bell.	Southwestern Bell representative advised customer he would not save money if he bought own system and would be dissatisfied with service. No specific employee name.	Southwestern Bell has no knowledge of an employee making disparaging comments. Customer was advised that key telephone system was not needed for the line and two instruments he had at the time.
Sound, Inc.	Fred J. Gibson, Cedar Rapids, Iowa; Northwestern Bell.	COAM equipment removed—Northwestern Bell Marketing personnel in Des Moines told other customers Gibson threw Sound, Inc. out because system did not work.	Northwestern Bell acknowledges they told customers about Gibson case—deny saying system did not work—said customer outgrew system. Customer had to supplement his Sound, Inc. system with a Bell key equipment before they lost system to Bell.

Attachment V

BACHI, INC.,
July 23, 1971.

Mr. DONALD P. BUHLE,
Illinois Bell,
Hinsdale, Ill.

DEAR MR. BUHLE: This letter gives you my permission to conduct a thorough in-depth review of our present telephone system. Based on the findings of your review, please submit a recommendation to myself for a complete automatic dial telephone system.

This letter releases you from all legal responsibilities in connection with the letter you received from Pritec and it is understood that you will complete this study as a request from me.

Yours truly,

PHILLIP L. BACHI.

ATTACHMENT W.—GENERAL ALLEGATIONS PLACED IN THE RECORD

Submitted by	Customer, name, location, and operating telephone company	Allegation	Response
HARM			
Lloyd Bailey	General; Mountain Bell	Connecting arrangements are not required because of Bell provided protection in form of Heat coils and carbons.	See statement, Connecting Arrangement Requirements.
Essential Communications Inc.	General; New Jersey Bell	Requirement for coupler with code-a-phone privately purchased precludes sales when Bell provides code-a-phone units without couplers.	Do.
Pritec	Polyfoam Packers; Illinois Bell	Customer provided channels not in violation of Illinois Bell tariffs.	Pending ICC Docket 58351—concerning method of connecting COAM channels to exchange lines.
"Telephone Co." Division of General Communications Engineering.	University of California at Berkeley; Pacific Telephone & Telegraph Co.	Ven for disconnected interface device in order to make PABX operational.	Pacific Telephone & Telegraph found trouble in Pacific Telephone & Telegraph provided CIX System—interface on PABX System reconnected.
Do	General; Pacific Telephone & Telegraph Co.	Interface devices are troublesome and unnecessary—we often have wired around them.	See statement, Connecting Arrangement Requirements.
Customer	Dr. R. Harris; New Jersey Bell	Need for protective coupler is discriminatory—Bell code-a-phones do not need couplers.	Do.
Do	D. K. Dorini; Southern Bell	Interface device not necessary.	Do.
Essential Communications Inc.	Eastern Outboard Parts; New Jersey Bell	Couplers required on privately purchased code-a-phones but not on Bell offered code-a-phones.	Do
PRICING			
Austin, Telephone	General; Southwestern Bell	Discriminatory pricing on competitive products. Proprietary rates either increased or remained the same but rates on business offering decreased.	See statement, pricing policy.
Business Commission Systems.	General; Mountain Bell	Bell threatens to increase cost of interconnect device and line costs to decrease cost of business equipment which is competitive.	Do.
Communications Consultants Inc.	do	Reduction in rates for 10 button sets	Do.
Do	do	718 Com Key filed rates 35% less than other key systems.	Do.
Do	do	Hotel/Motel System provided without filed tariff	Mountain Bell offered under "special equipment and service arrangements" section of tariff. Modifications of the tariff are being prepared.
Gulf States Telephone Co.	General; South Central	Cross subsidization—rates for residence customers and lines were raised. Rates on equipment for business systems were reduced.	See statement, pricing policy.
Litton Industries	General; Southern Bell	Discriminatory pricing on 770A PBX	Complaint dismissed by commission in Florida (docket 73762 TP).

PrTee	General; Illinois Bell	Petition for discontinuance of 718 Com Key as discriminatory	Rates filed with ICC and approved (PrTee petition was filed with ICC after closing date for such petitions).
Do	Allan Metallic, Lake Zurich, Ill.; Illinois Bell	Discriminatory pricing for Series 100A and B PBX systems	See statement, pricing policy.
Do	General; Illinois Bell	ICC Docket Nos. 57368 and 57395—IBT file rates of \$4 per line for customers desiring touch-tone service. ICC considered rate excessive and ordered IBT to file a cost of service study.	Cost of service study is complete (details are available to the commission and its staff). IBT considers the work materials supporting the study to be proprietary. Still pending before Illinois Commerce Commission.
Do	do	ICC Docket Nos. 58357 and 58472—IBT filed a tariff seeking approval of providing loudspeaker paging systems. PrTee opposes filing as against 1956 Consent Decree. ICC has no jurisdiction according to PrTee.	ICC took jurisdiction July 6, 1974 by commission order. IBT allowed to provide service by ICC approval.
Do	do	ICC Docket Nos. 57903-57906—IBT requested general rate increase wherein residence rates increased and business rates decreased.	Issues were fully argued. IBT was sustained and rate case was granted.
Do	General; Illinois Bell Telephone	Cross subsidization of services is alleged by PrTee.	Illinois Bell Telephone related allegation. Transcript is several hundred pages long and the matter has been postponed and continued at PrTee request several times since December 1973.
Do	do	ICC Docket 58102 Illinois Bell Telephone filed tariff for new and lower rates for PBX features already provided under existing tariffs at higher rates. PrTee claims new lower rates offered on selective basis to potential interconnection customers.	Still pending.
Do	do	ICC Docket 58357 complaint charging Illinois Bell Telephone with making duplicative charges for lines where interconnect customers are involved. This is charged as discriminatory—before ICC now.	Still pending before ICC, PrTee has not yet completed direct case after many months.
Sawyer Communications Consultants, Inc.	General; Pacific Northwest Bell	Oregon Public Utilities Commission approved rate order which lowered rates on business offerings and increased line charges to enhance competitive positions.	Refer to pricing policy.
Scott-Butner Communications, Inc.	General; Pacific Telephone & Telegraph	Predatory pricing of nonwestern PBX to decrease competition	Do.
Seletron, Inc.	General; Pacific Northwest Bell	Tariff rates on 718 and 1434 are too low. Bell purchasing vast amounts of cable which could cause a shortage for interconnect industry and increase cost of interconnect systems.	Bell System both manufactures and purchases cable to meet demand for construction programs.
Sound, Inc.	General; Northwestern Bell	Prospects of Sound, Inc., sold special assembly packages which allowed Bell to low ball financially when compared to filed rates.	Special assembly rates cannot be processed on filed tariff offerings.
Telephone Sales	Brookwood Hospital; South Central	Violation of consent decree, sales of trilinears	Trilinears were offered to customer under single payment option according to Alabama Subscriber Tariff—No violation of consent decree involved.
Telent Leasing Corp.	General; Southern Bell Telephone	Discriminatory pricing on 770A PBX and Key equipment	Refer to pricing policy.
Tele Resources, White Plains, N.Y.	General; New York Telephone	Interconnect subscribers billed "maintenance of service charge" when trouble has not been located.	Maintenance service charge only applies after company repairmen determine the reported trouble is associated with CPE.
Do	do	Telephone company rates for off premises extensions associated with CPE are exorbitant.	Rates for channels are the same whether telephone company or customer provided equipment. The company does retain right to apply special charges when customer specifies circuit parameters more stringent than standard. In 1973, less than 10 percent of CPE customers requiring channels were required to pay special charges.
Do	do	New York Telephone Co. discriminates against non-Bell customers by charging a surcharge for touch-tone service on C.O. lines serving customer-owned PABX's.	Pending court case. Allegation refuted by New York Telephone Co.

ATTACHMENT W.—GENERAL ALLEGATIONS PLACED IN THE RECORD—Continued

Submitted by	Customer name, location, and operating telephone company	Allegation	Response
SERVICE			
Arcata Communications, Inc.	Gilburn Industries, Plymouth, Mass.; New England Telephone	Trouble on off premise service between Plymouth and Bridgewater.	No trouble found—although recommended protective cover for Bell connecting arrangement to prevent cement dust problem. Pacific Northwest Bell policy not to provide such a converter.
Do	Kisby Tube Supply; Pacific Northwest Bell	Refusal to supply TT—rotary converter	
Business Communications, Inc.	Condomatic Co., Warren, Mich.; Havis Screwlock Co., Warren, Mich.; Arkin Distributing Co., Novi, Mich.; Far Eastern Gospel Crusada, Farmington, Mich.	Vendor complained to Michigan P.S.C. on behalf of four of his customers—complaint involves inefficient and negligent service by Michigan Bell associated with interconnect device.	Michigan Bell denies allegation. There were reports of service difficulty associated with each customer installation. Each report trouble or service difficulty was satisfied according to standard practice.
Century Business Communications, Inc.	General, Southwestern Bell	95 percent of reported troubles on Century provided services are Southwestern Bell created.	No specifics to support statement.
Gulf States Telephone Co.	General; South Central Bell	Repair of interface device delayed—wanted to bill Telco for service call.	South Central Bell's policy is not to accept billing from interconnect vendors for service calls where trouble is found in South Central Bell equipment.
PriTec	Associated Vendors, Maywood, Ill.; Illinois Bell	Numerous service problems associated with installation and repair.	Installation and repair problems did occur but situation was complicated by inconsistent and conflicting orders from the vendor.
Do	Paratone, Inc., Hillside, Ill., Illinois Bell	Location of CA inconvenient. No a.c. power.	Telco best judgment says CA to be located based upon several factors including safety, security, ease of access, engineering consideration, and customer preference.
Do	General; Illinois Bell	Interface deficiency analysis done by PriTec indicating Illinois Bell providing poor services to interconnect customers.	PriTec analysis is purely subjective—will investigate specific cases in determining facts, if provided.
Do	do	No notification on changes in technical parameters on line characteristics.	Illinois Bell notified customer of all published materials on changes made in TSPS conversions.
Do	do	1. Location of interface device is inconvenient.	Location of CA is determined by Illinois Bell and supplier with customer concurrence.
Sawyer Communications Consultants, Inc.	General; Pacific Northwest Bell	2. Installation of faulty interfaces.	CA installed and tested according to standard practices.
Sound, Inc.	Internal Medical Clinic, Des Moines, Iowa, Northwestern Bell	Bell response to provide service to several customers with private systems was slow.	This is not Pacific Northwest policy. Pacific Northwest honors service requests for any customer.
Telecommunications Association of New Jersey	General; New Jersey Bell	Repair service poor—problem never solved.	According to repair records Northwestern Bell responded to all repair calls promptly and corrected all repair problems.
Arcata Communications, Inc.	American Hospital Supply Company, Bedford, Mass.; New England Telephone	Poor repair service—no response by Bell to replace defective connecting arrangement complaint to PUC.	Need individual cases to investigate.
National Telephone Systems, Inc.	National Telephone Systems, Inc.; New England Telephone	"Drop Offs" and poor transmission caused by New England Telephone.	Arcata equipment found to be improperly grounded. Transmission tests found all trunks but one within limits—exception referred to switching systems and corrected.
			Repair delayed by series of misunderstandings between customer and repair service on reporting procedures.

Tele/Resources, White Plains, N.Y.	General; New York Telephone	CDH's (voice connecting arrangement for T/R System 32) cause inadvertent disconnects.	In early version of CDH, long loop loss could cause cutoffs. Design change in (01B) CDH has corrected this problem.
Do.....do.....do.....		CDH's cause unreliable toll diversion	"line voltage drops" during "busy C.O. traffic" refers to the use of the later version of the CDH in the panel offices only. Corrected by use of original CDH plus loop equipment.
Do.....do.....do.....		Can't get toll diversion information from New York Telephone necessitating "trial" installations.	Bell System technical reference specifies 50-millisecond closure as toll diversion indication. CPE properly designed to recognize this closure should divert calls. We do not believe our offices so equipped are failing to provide closure.
Do.....do.....do.....		Repeaters removed or omitted from trunks servicing CPE causing low volume	We cooperate with all vendors. The variety and generations of equipment prevents a "general" list of characteristics being prepared and updated. New York Telephone marketing and engineering people provide information to all vendors on a case basis. This procedure has been in effect 2 years and is meeting the needs of our customers.
Do.....do.....do.....		VCA's lack automatic gain which is needed since it prevents CPE from providing gain provided by "500" set	Same circuit design criteria is used for Telco or CPE. Except in case of CPE, loss is calculated for connecting arrangement.
Do.....do.....do.....		CDH "no rering" option generates trunk noise	"500" set provides loss on short loops but not gain. T/R is in error.
Do.....do.....do.....		VCA's are the source of an inordinate number of troubles	Early version had "no rering" option and was source of noise. Since June 1971 only "rering" version available.
Do.....do.....do.....		New York Telephone slow to correct trouble associated with CPE and does not report status of repair work. (Falstram Co. example)	Company has no indication of such problems.
Do.....do.....do.....		Telephone repairmen lack skill to diagnose problem causing CPE customer to be erroneously billed.	Personnel are required to respond to contact customer after trouble has been cleared. (Falstram Co. served by New Jersey Bell. Only three trouble reports on record all cleared within 2 hours).
Do.....do.....do.....		Need exists for economical solution to the voice-date coupler problem.	Personnel trained to diagnose and repair customer service problems. If T/R has specific example of personnel failure or misapplication, New York Telephone will investigate.
Do.....do.....do.....		Need exists for economical solution to the voice-date coupler problem.	T/R in error when stating "low speed" data can pass through CDH without problem CBF is required in addition to CDH to limit power levels. New York Telephone has had no requests for a CBF to be used with a CDH.
Universal Communications Systems, Inc. Customer	General; Chesapeake & Potomac Dr. Roger Harris, New Jersey Bell	Poor service to interconnect customers and repair service delays on connecting arrangements. Coupler for code-a-phone not compatible—service problems	Need specifies to investigate—Deny allegation—not Chesapeake & Potomac policy to discriminate.
Do.....do.....do.....	Lipshultz & Hone; Chesapeake & Potomac	Repair service delayed 5 days. Telco trunk problem.	New Jersey Bell claims coupler did work properly. Commission ruled in favor of direct electrical connection. New Jersey Bell appealing ruling.
C. A. AVAILABILITY			Credited account—reporting procedures breakdown between customer and repair service.
Communications Consultants, Inc.	General; Mountain	Availability of C.A.'s 28 days after order—too long to wait	Mountain Bell has established intervals on C.A.'s depending on type and number required. Interval is not 28 days on each C.A.
Cousino Communications, Inc.	Central Travel & Ticket, Toledo, Ohio; Ohio Bell	Failed to provide STC for installation of interconnection equipment after advising due date OK.	Installation report indicates back order conditions—due date missed by 9 days.
Executive	General; Pacific Telephone & Telegraph	CA device not available in Pacific Telephone & Telegraph but available in other Bell companies—STP versus CZACP.	Presently not tariffed—trial under way with intent to file.
Fisk Telephone Systems	General; Southwestern Bell	Request clarification of Southwestern Bell's position on C.A.'s availability.	Position explained as to availability of C.A.'s by Southwestern Bell.

ATTACHMENT W.—GENERAL ALLEGATIONS PLACED IN THE RECORD—Continued

Submitted by	Customer name, location, and operating telephone company	Allegation	Response
Petty Communications, Inc.	Chadbourne Hosiery Co., Gainesville, Ga.; Southern Bell.	Installation delayed because of CA availability.	Delayed firm written order for service from vendor was cause for delay. Repeated discussions between Southern Bell & Vendor on defining exact requirements—vendor delayed sending written order for service.
PricTec	General; Indiana Bell Telephone.	Installation delays designed to harass customers of interconnect industry.	C.A.'s are available on a regular interval depending upon type and number required. Illinois Bell attempts to maintain sufficient supply to meet customer demands.
CABLE SALE			
ARCATA	International Travel Agency, Houston, Tex.; Southwestern Bell.	Refused to sell cable—discriminatory to general public because of expenses incurred by Bell to remove.	After reviewing feasibility of selling wiring, Southwestern Bell determined sale was not practical.
Gulf States Telephone Co.	Roadway Inn, Mobile, Ala.; South Central.	Charge for appraisal pursuant to request for purchase of inside wiring.	South Central's policy is to charge for appraisals for inside wiring sales to interconnect customers. Appraisal is necessary to determine structural value of wiring.
Do	Trade Winds Motel, Biloxi, Miss.; South Central.	Bankruptcy—cable not removed for 2 years. New tenant purchased interconnect yet Bell tried to sell cable.	Cable ours—no request of creditors to establish ownership during bankruptcy proceedings. Standard practice to leave wiring in place to service next tenant.
Selectron, Inc.	General; Pacific Northwest Bell.	Charging for estimates and appraisal for inside wiring. Delays in obtaining quotation.	Charging for estimate and appraisals pursuant to sale of cable or inside wiring is Pacific Northwest Bell's policy. Each case is investigated individually to determine costs based upon structural value.
Sound, Inc.	Chet Elkon Insurance, Des Moines, Iowa; Northwestern Bell.	Never received cable quotation.	Oct. 30, 1973, quotation was verbal and refused by customer—Jan. 2, 1974 authorization in writing to Sound, Inc.

Tele Resources, White Plains, N.Y.	General; New York Telephone	Long delays and exorbitant prices involved in purchase of Telephone company in place inside wiring.	Reasonable price valuation process is necessarily complex and at times, time consuming. Objective is to price the specific installation to reflect reasonable cost compared to installation of identical wiring by customer. Experience demonstrates good response to these appraisals.
Gulf States Telephone Co.	General; South Central	Bell would not build new data center without rate case approval. Commission approved rate case, but data center not built. Therefore, excessive rates granted.	Rate relief necessary because of low earnings—data center project postponed along with many construction projects—rate relief not granted but obtained under bond.
PriTec	General; Indiana Bell Telephone	Advertising aimed at driving competition out. Advertising is being funded thru rates for all services.	Advertising does not degrade our competitors. It simply expresses our competitive advantages and requests customers to consider all factors before choosing a supplier.
Do.	do	Prospects threatened—Indiana Bell Telephone will not take customers of interconnect companies back.	Allegations denied. Indiana Bell Telephone will respond to all customer requests for service equally.
Sound, Inc.	General; Pacific Northwest Bell	No rates for couple or number group for interconnect of CTX type systems even though available in other Bell Companies.	Northwest Bell does not have rates for interconnection of stand alone DID, Centrex type systems. Few C.O.'s are equipped for CTX service.
Telecommunications Association of New Jersey	(Consumer Protection Association); New Jersey Bell	Position paper on interconnect industry. Several general statements on service, pricing, regulations, anticompetitive media adv. to destroy competition.	Allegations denied by New Jersey Bell as unfounded and purely subjective.
Tele Resources, White Plains, N.Y.	General; New York Telephone	Telephone Company should be liable for T/R expense in diagnosis and repair assistance in Telephone Company equipment.	Company does not seek aid of vendors in diagnosis and repair. If T/R has specifics of an instance New York Telephone will investigate. Company has no agreement for voluntary third party participation or reimbursement in repairs of service.
Do.	do	CPE subscriber requirement for written order is discriminatory.	New York Telephone sales personnel frequently obtain confirmation letters for Telco service orders. In the case of vendors acting as agents for customers, the written request is routine for practical reasons.
Do.	do	New York Telephone advertising misleading.	Both ads pointed out in T/R comments are clear, accurate and fair descriptions of company service. Such advertising is company policy.

EXHIBIT 2—*Letter From Mr. Feiner Responding to the Prepared Statement of Mr. McDermott*

PHONETELE, INC.,
Van Nuys, Calif., July 30, 1974.

Senator PHILIP A. HART,

Chairman, Subcommittee on Antitrust and Monopoly, Committee on the Judiciary, U.S. Senate, Washington, D.C.

DEAR SENATOR HART: I have received a copy of the Frank A. McDermott, Jr. Statement on behalf of the American Telephone and Telegraph Company on S. 1167. In that Statement he endeavors to refute some of my testimony.

The call restrictor equipment offered within the Bell System is quite ineffective in relation to customer requirements. Also, the equipment that is available by AT&T is unnecessarily costly or available only under long lead times.

Mr. McDermott states (Page 24)—“There is no single design or specification for call restriction which can practically and economically be used in all applications.”

The expression “all applications” is unreasonably all-encompassing, but if we were to state “most applications,” that would describe Phonetele’s Phonemaster. He continues by stating—“The reasons for this are the variations in dialing patterns throughout the country, differing needs of customers and varying capabilities of central offices (e.g., step by step, panel #1 and #5 type cross bar, electronic switching system and vintages of equipment within these equipment classifications).”

Such a statement of “reasons” only demonstrates the accuracy of my allegation that the Bell System has failed to provide effective call restriction equipment because the Phonemaster can handle “variations in dialing patterns” and “differing needs of customers and varying capabilities of central offices,” etc., in the situations described. Mr. McDermott has thus admitted Bell’s own failure. One should not be too harsh on Mr. McDermott, however, because too few people really understand the full range of capability of the Phonemaster.

Mr. McDermott then observes (Page 25)—“In addition, almost all PBX and Centrex customers have Bell System sales personnel and Business Service Advisors assigned to their accounts who analyze billing statements and conduct traffic studies for customers to maximize system utility, efficiency and economy.”

What he fails to observe is that once a billing statement is analyzed and misuse is observed, the sales personnel can offer, at best, ineffective remedies, as the Los Angeles County/USC Medical Center example reveals. In that regard Mr. McDermott observes—“The facts are that the installation of the Phonemaster and the installation of 76 Foreign Exchange circuits by Pacific Telephone contributed to the savings realized by the Medical Center.”

Those “facts” are correct and I so stated at the hearing, but had it not been for the availability of the Phonemaster, “the installation of those 76 Foreign Exchange circuits” alone would have been impractical. Pacific Telephone simply could not offer a comparable system change of a combination of 76 Foreign Exchange circuits and the Phonemaster to control them. Mr. McDermott states —“This installation was part of an overall plan that started in 1969 when Pacific Telephone began the implementation of a regional Centrex concept for Los Angeles County.”

While this may be true it does not explain why the County should have incurred \$30,000 a month in excessive telephone usage during the interim five years at a presumed loss of approximately \$1,800,000 (60 × \$30,000). Mr. McDermott continues —“Phase I scheduled Centrex service for the Los Angeles Civic Center in June 1973. Phase II scheduled the Los Angeles County USC Medical Center to be converted to Centrex in June 1974. Both installations feature Bell System call restriction service, utilizing foreign exchange lines and economic route selection. The Phonemaster equipment (which Mr. Feiner referred to in his statement of June 25, 1974) was removed by the Medical Center in May 1974, on completion of the long planned for installation of Bell System Centrex service.”

Is Mr. McDermott saying that only by going to a costly Centrex can the City and the County have effective restriction? It is true that “the Phonemaster equipment . . . was removed by the Medical Center in May 1974,” only to have part of that equipment re-installed in another County Hospital (Harbor

General), where once again Pacific Telephone could offer nothing as desirable. Mr. McDermott continues (Page 26)—“Mr. Feiner also stated that Pacific Telephone had not taken any steps to provide call restriction to the County or the Medical Center (Tr. 1477). This is incorrect, for the reasons described above. The fact is that Bell System call restriction equipment has been installed at 16 L.A. County locations since June 1968 (a list of the L.A. locations is set forth in Attachment J).”

The first sentence is an incorrect characterization of my remarks, but strike the words “the County or” and it is accurate. I am well aware of the County installations listed in Attachment J, and have objected to the Basic Termination Charges that foreclose the County's option to replace Pacific's equipment with the Phonemaster. In this regard, see EXHIBIT M attached to my Statement.

Mr. McDermott continues a lengthy discussion about the availability of a Bell System connecting arrangement, stating that “Mr. Feiner's allegation is not supported by the facts.” He states—“From the onset of Phonetele's introduction of the Phonemaster in November 1970, the Bell System has cooperated in the development of connecting arrangements to properly interface the Phonemaster with the telephone network.”

The fact is simply that a Bell System arrangement was not available until March 1974 when it was first installed at the New York Times.

The ZZAGM arrangement provided by Pacific Telephone in California was denied Phonetele outside California per EXHIBIT Z-13 of my Statement, i.e.—“Phonetele voiced strong disapproval of waiting a year to expand their marketing effort from California to the rest of the Bell System operating territory. They demanded that Pacific Telephone's Connecting Arrangement ZZAGM be made available as an interim arrangement throughout the Bell System.

“AT&T agreed it would try to improve availability of the connecting arrangement for PBX trunks, but did not agree to provide ZZAGM system-wide.”

Phonetele labored for years with the ZZAGM which was defectively designed. The Bell System CTD was designed without Phonetele's knowledge or participation and would not work with the Phonemaster. But Mr. McDermott states—“Thus, four connecting arrangements, specially designed for call restricting equipment, were made available to Mr. Feiner during the period November 1970 to December 1973.”

The simple fact is that Phonetele first contacted AT&T prior to February 13, 1970 (see Feiner EXHIBIT II), got first cooperation in November 1970 which resulted in a defectively designed ZZAGM arrangement, was offered the Bell System CTD which would not work with the Phonemaster, was denied use of the ZZAGM outside California, and did not finally receive an arrangement until March 1974, over four years since the original contact. Can reasonable men deduce from such inaction that Phonetele does not have a valid complaint? Could reasonable men conclude from Mr. McDermott's representation that the Bell System required over four years to produce a connecting arrangement? Mr. McDermott states (Page 29)—“The Bell System will continue to cooperate with manufacturers (as we did with Mr. Feiner) to develop appropriate connecting arrangements. Attachment K contains a list of some 75 connecting arrangements now offered by the Bell System.”

I do not regard AT&T's actions as “cooperative” when they required over four years to produce one compatible connecting arrangement when “some 75 connecting arrangements (are) now offered by the Bell System.” Mr. McDermott continues—“The Bell System, not the interconnect industry, has provided the fundamental research and development effort that has culminated in the innovations which comprise the vast majority of the basic building blocks of modern user premises equipment. So far as we know, the interconnect industry has largely been engaged in reconfiguring or repackaging those building blocks.”

Mr. McDermott's efforts to apply this statement to Phonetele or the Phonemaster is totally ill-informed and the rest of his remarks are pure breath-taking. His Attachment C, “History of Bell System Innovation Key Telephone Systems and Auxiliary Products” clearly demonstrates that there has been no development of restriction equipment, an auxiliary product.

I am certain it was not Mr. McDermott's intention to in anyway misrepresent Phonetele's relation with AT&T over the past four and one half years,

nor did he intend to be misleading about the capabilities of the Phonemaster, but I do hope the Committee will add these remarks to correct his statements on the record.

Sincerely,

ROBERT L. FEINER, *President.*

EXHIBIT 3.—*Letter From A.T. & T. Transmitting Copy of Additional Material as Part of Prepared Statement of Mr. McDermott*

AMERICAN TELEPHONE AND TELEGRAPH CO.,
Washington, D.C., July 26, 1974.

HON. PHILIP A. HART,
*Chairman, Subcommittee on Antitrust and Monopoly
Committee on the Judiciary
Washington, D.C.*

DEAR SENATOR HART: Enclosed find 5 copies of Antitrust Review Seminar Administrator's Guide as well as Michigan Bell Telephone Company Exhibits which we are filing and submitting for the record as a part of the Statement of Frank A. McDermott that was filed with the Subcommittee today.

Very truly yours,

DOUGLAS B. McFADDEN.

Enclosures: [Exhibit 19 follows. Rest of material retained in subcommittee files.]

[Exhibit 19] Antitrust Review Seminar Script What Is In Our Files

WHAT'S IN OUR FILES

SCENE 1—RECEPTION ROOM IN THE OFFICE OF MR. PARTNER, COMPCO'S ATTORNEY

DELIVERY CLERK WHEELS SEVERAL LARGE BOXES INTO RECEPTION AREA

RECEPTIONIST. What's this.

CLERK. Delivery for a Mr. Partner.

RECEPTIONIST. Yes, he works here; I didn't know he was moving in.

CLERK. Sign here.

RECEPTIONIST. Okay. What is all this anyway.

CLERK. Who knows, it's from the telephone company.

RECEPTIONIST. Let's see where will I put it.

CLERK. You better make up your mind. I got 147 more boxes just like this out in my truck and I'm supposed to turn them all over to you. So you better make up your mind where you want them.

RECEPTIONIST. I'd better call Mr. Partner. (Mr. Partner enters) Oh! Mr. Partner I was just going to call you.

MR. PARTNER. Yes.

RECEPTIONIST. You have quite a mess out here.

MR. PARTNER. I have.

RECEPTIONIST. Yes. These boxes are for you.

MR. PARTNER. For me?

RECEPTIONIST. Yes! They're from the telephone company.

MR. PARTNER. The telephone company? Oh yes! These must be the documents they sent in response to our discovery motion in the COMPCO case. And a day early just like the telephone bill. It looks like we have a lot of reading ahead of us.

RECEPTIONIST. And there are 147 more boxes just like these.

MR. PARTNER. A 1-4-7? Umm Oh. Of course, there would be. Nowadays everybody makes a dozen copies of everything. And we've got to read through them all. Well, maybe something will turn up.

RECEPTIONIST. Where shall I put them?

MR. PARTNER. Put them in the room where those three young lawyers from Harvard just moved in. That'll give them something to sharpen their teeth on.

RECEPTIONIST. Yes Sir

SCENE 2—OFFICE OF ARNOLD, MS. BIDDLE AND CARLIN MR. PARTNER'S LAW ASSOCIATES (MR. PARTNER, ARNOLD, MS. BIDDLE AND CARLIN CONFERRING)

MR. PARTNER. I cannot impress upon you strongly enough the importance of this case. First, we're suing for \$50 million dollars. Second, we're suing a defendant that can pay it. Now, this is not a case of just trying to salvage some-

thing for a bankrupt client. I'm convinced COMPCO has good management. It knew the communications business and given a fair chance, they'd have made it big. But what can anyone do against Ma Bell; why they've got so many services that they can lower their prices a little here when someone else comes along looking for business and they can raise them some place else. You don't stand a chance competing against them. ¶And their neurotic. Why they've got just about 100% of the market. But will they let COMPCO or DCS or Consultants Inc. get a piece of the action—1%, 2% of the market—Not a chance. They're afraid that COMPCO would put them out of business. ¶Well, we've got a job to do. We've got a lot of reading to do. Because what we find in those boxes will make or break our case. We can subpoena witnesses till we're blue in the face—we won't get a thing. They will herd out so many distinguished silver-haired vice presidents that you'll think you're suing the Supreme Court. And they will tell us how they invented the transistor (probably about 20 times), and how great Bell Labs is. And that all they do is sit around and figure out ways to provide good service. You will find them so well trained that you won't get a thing out of them. They'll be ready. ¶But what's in those boxes, that's what they said about COMPCO when they weren't thinking about being sued. That's what every Tom, Dick and Harry wrote about competition. Vice presidents, first line supervisors, anyone who could write, even if he couldn't spell. ¶That's what they wrote when they got up on the wrong side of the bed, when they thought their interval was too long or when they thought they were writing a private memorandum that would never see the light of day.

ARNOLD. Mr. Partner.

Surely the Bell Telephone Company lawyers have been through all these papers. And they're not about to let us see anything incriminating.

Mr. PARTNER. That's not so, Arnold. One thing I'll give them is that they're honest. Stupid maybe, but dishonest no. You see they have a court order to produce this material. Now if they shred it, or burn it, or just don't provide it, they're violating a court order. We could put the few silver-haired vice presidents in jail if they did that; we might even get a few lawyers disbarred.

Ms. BIDDLE. What should we be looking for in these papers?

Mr. PARTNER. I was getting to that. I should tell you briefly what the theory of our case is. Of course, we are suing under the Sherman Act, Section 1, for conspiracy in restraint of trade, and Section 2, for monopoly or attempt to monopolize. We also charge them with a variety of anti-competitive acts. Selling below cost, cross-subsidy, reciprocity, disparagement, things like that.

Ms. BIDDLE. But everyone knows they're a monopoly, so what do you want us to prove.

Mr. PARTNER. Ah! A monopoly, yes. But a monopoly of what? Now COMPCO sells PBXs, key equipment, station apparatus. If they can sell this equipment, then Bell does not have an absolute monopoly of the station market. Well, we know they have a monopoly of the station market, but they have no special right to maintain that monopoly. ¶Now, the phone company has a big switched network. They put telephones in your home, PBX's in your office, they have lines going to their exchange offices, from one exchange to another, from city to city and state to state. ¶Maybe it isn't just one service. Maybe there are a lot of services. Maybe they serve a discrete station equipment market, a local market and an interstate market. When you are going through these papers, see what different markets you can find. And then see how they tie one market to another. Maybe they say we won't serve you in this market unless you buy from us in that market, or if you buy from us in this market we'll sell to you at a lower price in that market, or give you better service, or maybe they just don't say these things they just do them. ¶I'm talking about tie-in sales, because if you can prove a tie-in, then we have a per se a violation of the Sherman Act, and we don't have to worry about elaborate proof of conspiracy or intent. ¶COMPCO has tried to sell to Bell's customers, and has tried to sell to the phone companies themselves. We want to show what the phone companies have used unfair practices to keep COMPCO from selling to their customers, and that Western has used unfair practices to keep the phone companies from buying from COMPCO. We want to show conspiracy, even if we don't have to prove conspiracy if we have a per se case, it makes good window-dressing if we can prove that AT&T and Western ganged up on COMPCO. You know, the big guys against the little guys. Or that the telephone companies dumbly did whatever AT&T and Western told them to. ¶Search for anything that smacks of unfair practices. Did the phone company

knock COMPCO products. Did they take it out on any customer when went with COMPCO or any other interconnect company. Like not giving them good service, or maybe not doing business with them at all. Remember the telephone company is the biggest company in the world. They're also the biggest buyer in the world. If you print books for them, if you pick up their garbage, if you run their cafeteria, they might try to put pressure on you not to go private. That's reciprocity. ¶Look for things that explain why the phone company did what they did. Things that interpret facts. Now we're going to get more facts than we know what to do with.

But look for things that will tell us what it all means, what the intent of the phone company was. Okay? ¶If you run into anything that you don't understand, COMPCO has about a dozen former telephone company employees on the payroll, they'll be available to help you. ¶Ms. Biddle, gentlemen, this is an historic case. I'm convinced we'll win and that we'll go down in history as the law firm that broke up the Bell System.

CARLIN. Ah Mr. Partner, what happens to our telephone service. I always thought they were pretty good.

MR. PARTNER. That's not our problem, Carlin. First, we break up the system, then we worry about putting it back together again.

CARLIN. You sound like Abbey Hoffman.

SCENE 3—OFFICE OF ARNOLD AND MS. BIDDLE. IT IS LATE AT NIGHT; ARNOLD AND MS. BIDDLE ARE PORING OVER PAPERS

ARNOLD. I'm going blind reading these files. Is that what I was on the Harvard Law Review for—reading dusty old files.

MS. BIDDLE. Cheer up. If you find anything good, you may get a bonus at Christmas time.

ARNOLD. By that time my contact lenses will need contact lenses.

MS. BIDDLE. I finally finished reading the files of the Construction Plans Department on the Keyplex matter.

ARNOLD. Well how can that be? I'm going through the Engineering file on the same matter and I won't be through with it until the end of the summer. Construction Plans was just as much involved in this project; they should have just as large a file.

MS. BIDDLE. Well, I suppose so. I was suspicious myself so I was suspicious myself so I asked Mr. Partner to check it out with the phone company counsel.

They looked into the matter and said that the Construction Plans Department has a record retention program that tracks with the FCC rules. Actually, from our point of view, it's a record destruction program. The FCC rules say that they have to keep their records on file for so many months and so many years, then they can destroy them when they don't need them anymore. So Construction Plans has a program of reviewing files and throwing away anything they don't need.

ARNOLD. Well, isn't that true of Engineering?

MS. BIDDLE. Oh, I suppose so. I guess they just didn't throw away what they could have. So, you have a lot to read and I get to go home.

You may find just what we're looking for.

ARNOLD. Hey, you can say that again. You know I have read this Bell Labs report on the Keyplex system 12 times, but in this last copy—here—let me read this to you. This is where Bell Lab concludes that the Keyplex would not meet the Bell System standards. And there's written in the margin: "SWB Engineers (now that must be Southwestern Bell) say that the Keyplex is every bit as good as the 1-A." (Now that's the Western key system). And over here it says "Dupe (BTL) says that as far as he is concerned he would use the Keyplex in his office if he could get Telco to maintain it." And then there is something else. It says: "Nothing new in the 616."

MS. BIDDLE. Do you have any idea who made those notes?

ARNOLD. Well, this is addressed to 20 different people. It's got to be one of them (comparing papers). Let's see "JLS," that would be J. L. Simpson." Right, yes there's a faint "this copy for" arrow pointed right to him.

MS. BIDDLE. I'd like to get him on the stand.

ARNOLD. Then there's this whole Bell Labs report. I couldn't make heads or tails out of it. It seems thorough and yet somehow they never really seemed to point out exactly what was wrong with the Keyplex. Still, it was very impressive. They sent out copies to all the companies, but the fact is that no one

ever bought the Keyplex, except Southwestern Bell. And that, that's very surprising. Because the report was not that bad and the Keyplex is about 10 cheaper than the Western product. Then there's the AT&T letter, it looks like one of those institutional letters. Maybe that's it. Maybe by not saying that the Keyplex is okay, they impliedly said "don't buy it".

Then over in this file somewhere is a memo that will help us explain all this. Aha. Here it is. Now this says that "Mr. Pflugg's letter of January 17, 1971—now this is the Engineering letter sent along with the Bell Labs report—was widely interpreted as a directive not to buy the Keyplex."

MS. BIDDLE. That's just what Partner's looking for.

ARNOLD. Sure. I mean the report was pretty fair. And the Engineering letter was pretty carefully written, but this last piece helps us explain that the whole thing was a smoke screen to tell the companies not to buy the Keyplex.

MS. BIDDLE. They'll make us both partners.

ARNOLD. Not only that, I think we have the elements of a conspiracy going here. We've got AT&T, Bell Labs and on top of that Western Electric.

MS. BIDDLE. Well, how Western?

ARNOLD. I got a letter here from Western to AT&T saying that they are coming out with the 616 in the fall of 1971. "We strongly urge—now I'm reading this—that you advise the operating companies not to make commitments for other vehicles (and that means the Keyplex because this whole file covers the Keyplex) until the 616 is available."

MS. BIDDLE. I don't believe anyone would write such a letter.

ARNOLD. It is signed by Mr. P. T. Lynch, Assistant Marketing Supervisor.

MS. BIDDLE. Well, that's probably not a high level job.

ARNOLD. Well, he is still a supervisor.

MS. BIDDLE. That's true.

ARNOLD. And I think we can turn what he said into company policy.

MS. BIDDLE. How can you do that?

ARNOLD. He said, "we think" you shouldn't buy the Keyplex. "We" is the company isn't it?

MS. BIDDLE. Yeah

ARNOLD. Didn't his boss ever get a copy of that letter. Now did his boss ever tell him that we was wrong. Did he ever ask him to withdraw that letter? Did AT&T get the letter? And, didn't they do just that by sending out a letter that was "widely interpreted" as a directive not to buy.

MS. BIDDLE. Ooh. I'm spending Christmas in Jamaica

ARNOLD. You know, not only that, we have got a conspiracy to foreclose the customer market to the COMPCO Keyplex. We have Marketing Department files which show they used the Bell Labs report in their sales effort.

MS. BIDDLE. Well, what do you mean?

ARNOLD. COMPCO was trying to sell their systems to the Bell's customers. Illinois Bell pulled out a copy of the Bell Labs report and showed it to Lambert and Cole, the big merchandising chain.

MS. BIDDLE. What's wrong with that?

ARNOLD. It's this last part there it says: "COMPCO's Keyplex does not meet Bell Systems standards."

MS. BIDDLE. So.

ARNOLD. Look, if I say that your product does not meet the standards, I'm really saying that it is inferior. Now I think we can make a case of disparagement out of that.

MS. BIDDLE. Aren't you just stretching it just a little?

ARNOLD. Maybe, but this little point added to another little point and another and another and I think we can create the image of a huge octopus wrapping its tentacles, around every business opportunity that came COMPCO's way. Every time COMPCO saw a sale, Bell would throw all the resources of Bell Labs, AT&T, Western, all the operating companies into the fray to beat out COMPCO. It almost makes me want to cry.

MS. BIDDLE. Me too. And I'll bet J. L. Simpson and P. T. Lynch will be crying too before this case is over.

SCENE 4—COURTROOM. MR. PARTNER IS CROSS-EXAMINING J. L. SIMPSON.
JUDGE PRESIDES. ROGERS IS THE TELEPHONE COMPANY LAWYER

MR. PARTNER. Now then, Mr. Simpson I want to remind you that you are under oath. If you don't tell us the 100% truth, you're guilty of perjury and can be fined and sentenced to jail. Do you understand that.

SIMPSON. Yes sir.

ROGERS. I object. Counsel's remarks infer that Mr. Simpson may not be expected to tell the truth and that inference is totally unwarranted.

JUDGE. Objection sustained. I'm sure the witness knows he must tell the truth and knows the consequences if he does not.

Mr. PARTNER. Now then Mr. Simpson, I draw your attention to the plaintiff's Exhibit No. 237. It's a memo dated July 11, 1972 and it is unsigned. Have you seen this memorandum before?

SIMPSON. Yes sir.

Mr. PARTNER. Did you sign it?

SIMPSON. No sir.

Mr. PARTNER. Well why didn't you sign it?

SIMPSON. Well, it wasn't official company policy.

Mr. PARTNER. It recites facts, doesn't it?

SIMPSON. Yes sir.

Mr. PARTNER. And facts are facts aren't they?

SIMPSON. Yes sir.

Mr. PARTNER. Well, how can there be a company policy about the facts?

SIMPSON. Oh, well you see. . .

Mr. PARTNER. Or was there a company policy to agree that the facts were not the facts?

SIMPSON. No sir.

Mr. PARTNER. You said that the Engineering letter of January 17, 1971 was widely interpreted as a direction not to buy the Keyplex.

SIMPSON. Yes sir.

Mr. PARTNER. Now was this true or not?

SIMPSON. Well, you see. . .

Mr. PARTNER. I'm not interested in explanations Mr. Simpson. Was it true or not?

SIMPSON. It was true.

Mr. PARTNER. No further questions. (Mr. Partner goes to counsel table. Rogers conducts redirect examination of Simpson for the telephone company.)

ROGERS. Mr. Simpson. You testified that this letter was widely interpreted as a direction not to buy the COMPCO product.

SIMPSON. Yes sir.

ROGERS. When you said "widely interpreted," who were you talking about. By whom was it widely interpreted that way.

SIMPSON. Oh well, the operating telephone companies, AT&T.

ROGERS. Now just who did you talk with in the operating telephone companies about this.

SIMPSON. Many people.

ROGERS. Well, who for example.

SIMPSON. You mean one person. Well, I remember speaking to the New York office. The New York Company.

ROGERS. You don't speak to an office or a company you speak to a person.

SIMPSON. Ha, that's right.

ROGERS. Well who did you speak with.

SIMPSON. Let's see, it would of been. . . Well, I wrote the memorandum in 1972, July of 1972, so it would have to be before then. Mike Carson had the Customer Products job over there at that time or was it Bill Frazier. Bill left about December of 1971 so it was with Carson or Frazier.

ROGERS. Well which was it, Carson or Frazier?

SIMPSON. Well one of them.

ROGERS. But you're not sure which.

SIMPSON. No.

ROGERS. When did this conversation take place?

SIMPSON. When?

ROGERS. Yes.

SIMPSON. Well, sometime before I wrote the memorandum.

ROGERS. But you don't remember when. I mean was it one week, one month, one year, five years.

SIMPSON. I don't remember.

ROGERS. But you do remember having had that conversation with Carson or Frazier.

SIMPSON. Yes.

ROGERS. Was that in person or on the telephone?

SIMPSON. Let's see, sometimes I had lunch with Mike so it was probably at lunch we discussed the matter.

ROGERS. But you don't remember when you had this conversation with Carson or Frazier.

SIMPSON. What?

ROGERS. The conversation about "widely interpreted."

SIMPSON. Oh yes.

ROGERS. Yes what?

SIMPSON. Yes I know what you are talking about.

ROGERS. Maybe we'd better start at the beginning. Now what did he say to you and what did you say to him?

SIMPSON. Who?

ROGERS. Carson or Frazier or whoever it was you had the conversation with about "widely interpreted as an order not to buy."

SIMPSON. Well, come to think of it, I don't think I even discussed it with them, but...

ROGERS. Who did you discuss it with?

SIMPSON. Probably nobody in particular, but everybody knew what the letter meant. And besides this was just a note I wrote to myself. I never thought it would be used in a law suit.

SCENE 5—OFFICE OF ROGERS (ROGERS AND BARTLETT, ANOTHER TELEPHONE COMPANY LAWYER CONFERRING?)

ROGERS. You have just witnessed one of the most unpleasant experiences a lawyer has to go through. Impeaching the credibility of his own witness. And this was doubly painful because you can be sure that he's a loyal son of the Bell System who was trying to do his job in the best way he could.

BARTLETT. Yet he deserved to be impeached. Whatever his motives, he was talking about something he really knew nothing about.

ROGERS. When Simpson wrote that that Engineering letter was "widely interpreted" to mean thus and so, he wasn't telling the truth. He was giving his opinion, he wasn't saying what the collective understanding of the telephone companies was.

BARTLETT. He couldn't identify anyone who interpreted the letter that way.

ROGERS. Yet it's terribly damaging. Oh, we can cross-question Simpson. We can show he didn't know what he was talking about. But we can't get that memo out of the record. As the trial goes on, it stays there—the words in the memo—inviolate. The judge and the jury may forget that Simpson didn't know what he was talking about. They may reread that memo and may come to the conclusion that that really was the company policy.

BARTLETT. They would feel that this was Simpson honestly speaking to himself. Whereas now, he may have a motive to falsify, to pretend that he really didn't know what he was talking about. After all, he works for the phone company. Maybe he's worried about his job.

ROGERS. Simpson made a mistake. He thought he could write a memo to himself that it wouldn't be subpoenaed or discovered.

BARTLETT. As a matter of fact, in our search, Simpson didn't produce this letter. It seems that somebody asked him a question about something and he sent this person a copy of this memo to himself. Simpson must have destroyed his own copy. But heavens know how many copies were made of the memo he sent to that somebody.

ROGERS. And another regrettable thing is this record, this inaccurate record, this record that wasn't even intended to become a company record, need never have been retained. Even if it was a company record it could have been thrown out in six months. The FCC rules didn't require us to retain them any longer than that, there were no outstanding court orders. Instead, this memorandum gets buried in the files until two sharp eyes with contact lenses spotted it.

BARTLETT. Out of the hundred thousand documents supplied in this case, only ten bad apples may be enough to spoil us.

ROGERS. How could we avoid this kind of thing happening?

BARTLETT. Well, probably we can't. We have a million employees and they all generate paper. We can do our best to tell them what our company policies are but we can't be sure they will all understand them.

ROGERS. When we find incriminating statements, misstatements of company policy, we can show that the writer didn't know what company policy was, that he was not himself a policy maker. Then we can rebut his statement by evidence from policy makers and by documents that prove what our company policy has been. Oh will you smoke.

BARTLETT. No thank you. But for those who can understand what our policies are, we must tell them that we believe our business has the characteristics of a natural monopoly. It just doesn't make sense to have two phone companies, two separate phone systems. We believe that our customers are better off with one system which provides a complete, integrated, end-to-end service.

In recent years, some commissions have made decisions which tend to fragment our business and to apply competition to the pieces. Okay, if that's their judgment we can accept it. Where commissions mandate competition, we're going to be a tough, but fair, competitor. We accept the principles of free and open competition.

ROGERS. In the market place for telecommunications services as we have always recognized it in the sale of telecommunications products.

BARTLETT. Right, right. We will, of course, urge the commissions to consider the impact of competition on the universal telecommunications network, on the Bell System as the supplier of last resort and on our consumers. We will press our views fairly before the commissions and in the market place. We will give the public the best service we can and at the lowest prices.

ROGERS. If we all understand that, it goes along way toward assuring that our files will not be incriminating. Let's see if we can come up with some principles that will guide us, so we don't go around making memos that hurt the way Simpson did.

BARTLETT. Perhaps the first thing to keep in mind is the difference between fact and fancy.

ROGERS. Maybe you can say that a little better.

BARTLETT. Surely. Now Simpson's mistake was that he mistook his own opinion for a fact. Now if his statement were true, it would be a fact that the operating companies understood the ambiguous Engineering letter as a direction not to buy. But the operating companies did not so interpret the letter and, if they did, Simpson didn't know it. He may have thought that the letter should have been interpreted that way but that was only his opinion. He mistook his opinion for fact.

ROGERS. Hmm any other points?

BARTLETT. Yes. Sergeant Friday of Dragnet will tell you "give me the facts, just the facts." No characterizations. For example, we often use expressions like the Keyplex is "as good as" the 616. Or "nothing new." But what do these adjectives mean "good," "new," "acceptable," appropriate." Do they have anything to do with facts or are they careless judgments without any factual strength to them. Descriptive adjectives are usually words that don't describe. Tell what the equipment does, how many ports it has, what the signal-to-noise ratio is, and so on. But "good" and "bad" don't give us much of a story.

ROGERS. Anything else?

BARTLETT. Yes, there's one more point to this story. That's the Bell Labs report. It was well written, it was factual and they did come up with the conclusion that the Keyplex did not meet Bell System standards. Now that's a judgment, an opinion. But that was the whole purpose of the report, and it gave the factual basis for its conclusion.

ROGERS. Well, so far it's an O.K. document. But suppose Marketing decides to use it as a sales gimmick. It's fine as an internal document to guide us in our own purchasing decisions: we know how to use it. But once it's used outside the System, that phrase "does not meet Bell System standards" takes on a whole different meaning. It smacks of disparagement. Now I don't suppose that anybody could make a common law action for unfair competition out of that, but it's one more piece of bad window dressing that our competitors will try to use to show a predatory intent on our part, an intent to monopolize.

BARTLETT. Well, we are a monopoly and we're likely to stay that way. Well, if that's in the cards, let's make it a monopoly achieved and retained through excellence. Excellence in giving good service, excellence in keeping our prices low. That's what the Bell System is all about.

EXHIBIT 4.—*Excerpts From Minutes of A.T. & T. Presidents Conference of May 8-12, 1972*

NAP STATUS

Phase I activities have been concluded by '195.' Departments. Guidelines, in the form of General Letters, have been transmitted to the Associated Companies, as follows:

Comptrollers, December 17, 1971, R. G. Zender; commercial, December 27, 1971, P. D. Loser; plant, January 12, 1972, J. H. Hunt; commercial (re: CENTREX), January 19, 1972, P. D. Loser; business market servicing, January 21, 1972, F. A. Robinson, Jr.; traffic, January 26, 1972, C. E. Kleckner.

Eleven of the Associated Companies have tariffs ready to file. Five other companies have "guide" tariffs. Three have not unbundled tariffs as yet. Overall, the companies are in a "hold" position waiting for direction from AT&T.

Phase II activities (73 of the original 121 PERT activities) are being pursued expeditiously. An in depth reevaluation of activities is being conducted with each department in an effort to refine definition. The goal of mid-1974 completion has now slipped to December, 1974 and may slip to mid-1975. The slippage of time frames is attributable to two factors:

1. The complexity and expansion of activities as involvement occurs and knowledge is gained.

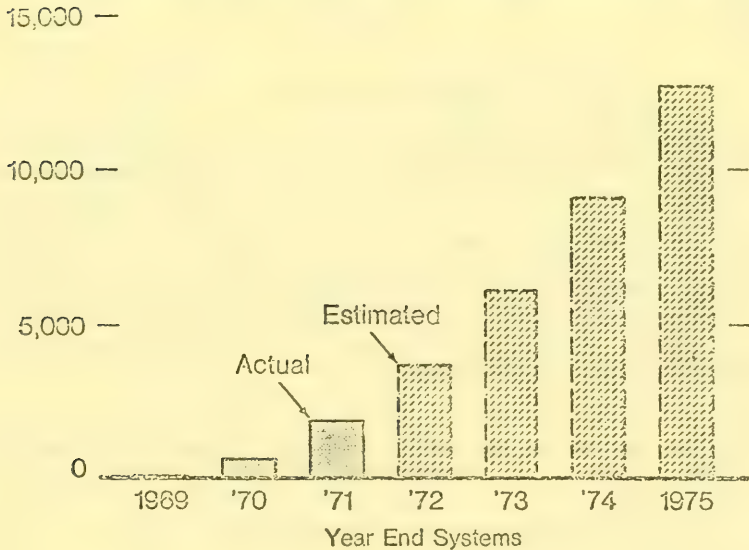
2. The shift in priorities by some departments.

The Service Costs people on April 5, 1972 transmitted to the Associated Companies preliminary uniform cost methodology for service connection, change and move. On April 17, 1972, another cost package was transmitted to the Associated Companies from Mr. Killoch. This package contained a cost study to provide the Associated Companies with a means of determining an average monthly cost for the access line, for exchange usage and for the basic station (exclusive of inside wire), within a regulatory jurisdiction.

A Product Profitability Tracking System is being reviewed at the AVP level. The System will be conducted by a team composed of representatives from Service Costs, Comptrollers, Plant and has under development a tracking system for installation costs with anticipated completion by the end of the second quarter.

Competition in the terminal area . . .

Customer Provided PBX-Centrex



Revenue Loss (\$ Million) - Cumulative
 .2 2.5 10.9 29.8 63.3 116.1 193.1

COMPETITIVE IMPACT

[Voice]

	Actual			Estimate				Totals	1969-75 Cum. Rev.
	1969	1970	1971	1972	1973	1974	1975		
PBX/CTX:									
Number of cases lost.....	50	584	1,341	1,800	2,400	3,000	3,600	12,775	-----
Cost in millions of dollars.....	\$0.36	\$3.68	\$8.56	\$12.3	\$16.9	\$21.7	\$26.8	\$90.3	\$192.35
Key telephone systems:									
Number of cases lost.....		440	975	1,500	2,100	2,800	3,400	11,215	-----
Cost in millions of dollars.....		\$0.83	\$1.75	\$2.36	\$3.36	\$4.56	\$5.64	\$18.5	\$38.76
Combined totals:									
Number of cases lost.....	50	1,024	2,316	3,300	4,500	5,800	7,000	23,990	-----
Cost in millions of dollars.....	\$0.35	\$4.51	\$10.31	\$14.66	\$20.26	\$26.26	\$32.44	\$108.8	\$231.11

Notes—

1. E.G.: $\$0.36 \times 6.5 \text{ years} + \$3.68 \times 5.5 \text{ years} + \$8.56 \times 4.5 \text{ years} + \$12.3 \times 3.5 \text{ years} + \$16.9 \times 2.5 \text{ years} + \$21.7 \times 1.5 \text{ years} + \$26.8 \times 0.5 \text{ years} = \192.35 . Assumes all cases remain CPE thru 1975.
 2. 1972 to 1975 PBX estimates have not been revised upwards notwithstanding increases in 1971 actuals of 11% (1,341 versus 1,200). Revisions will be considered after analysis of 1st Quarter '72 results. For Key Telephone Systems, estimates have been increased in view of 62.5% increase (975 actual versus 600 estimated).

REPRESENTATIVE SERIES RATES AS OF NOVEMBER 1971

	Series 100			Series 200			Series 300		
	Common equip- ment	Trunk	Station	Common equip- ment	Trunk	Station	Common equip- ment	Trunk	Station
"195".....	\$75	\$5.00	\$3.25	\$100.00	\$5.00	\$4.00	\$100.00	\$5.00	\$4.75
New England (Massachusetts).....	100	5.00	3.50	100.00	5.00	4.25	100.00	5.00	5.00
New York.....				91.46	4.87	6.79	91.46	4.87	8.72
Southern (Georgia).....				125.00		4.35	125.00		5.11
Indiana.....	90	6.00	3.50	120.00	6.00	4.25	120.00	6.00	5.00
Chesapeake & Potomac (Vir- ginia).....				250.00	6.00	4.50	250.00	6.00	5.50
Northwest (Minnesota).....	100	1.50	3.00	125.00		4.50	125.00		5.25
Michigan.....	85		3.25	50.00		5.25	50.00		6.50
PNB (Oregon).....	50		3.25	175.00		4.75	225.00		5.75

SERIES RATES BACKUP

The wide disparity in existing rate levels makes it virtually impossible to develop a uniform policy for the introduction of our newer equipment.

Our 100A tariff recommendation (S05A) and our proposed 100B (770) tariff both require an available rate corridor with respect to existing tariffs.

Unfortunately, our newer systems (805 and 770), rated at compensatory levels are in direct internal competition with our present non compensatory offerings.

As a direct result of this internal competition, and realizing that to raise existing rates to fully compensatory levels could and probably would foster losses to outside competition, several Companies are actively considering a "grandfathering" of existing series service and offering only 100A and 100B structured offerings to new subscribers.

EXHIBIT 5.—Letter to Mr. Kirkpatrick From Mr. Williamson Re Nippon Electric Co. NA4-09 PBX

July 19, 1971.

Mr. P. C. KIRKPATRICK,
 Marketing Manager, Telecommunications Headquarters,
 Cheapside House,
 133 Cheapside,
 London E.C.2.

DEAR MR. KIRKPATRICK: This is in response to your letter of May 20, 1971 concerning our experience with Nippon Electric Company's NA4-09 PBX. To

date, about 100 NA4-09 systems have been purchased and placed in service by five of the Bell System Operating Companies. Another 100 are on order, and scheduled for later 1971 delivery. Overall, our experience with the system, in terms of its operation, reliability and service, has been good. Its trouble rate is comparable with our existing crossbar, electromechanical systems. The time to clear troubles has been higher than average, but we expect that this would improve as our maintenance people become more familiar with the system.

Quite frankly, the appeal of the NA4-09 has been due to the absence of an equally attractive Western Electric product. We have recently completed development and are now manufacturing a new electromechanical PBX which is in the NA4-09's line range, with station and attendant features and traffic capabilities not available with the NA4-09. As production levels for this new system increase, we expect that new purchases of NA4-09's will decrease sharply over the next year or so.

Sincerely,

C. R. WILLIAMSON/WS.

EXHIBIT 6.—Summaries of A.T. & T. Customer Products Council and Executive Policy Committee Meetings

CUSTOMER PRODUCTS COUNCIL MEETING OF NOVEMBER 5, 1970

ATTENDING

Council Members

G. Accettura—WE Co.
J. A. Baird—BTL
R. T. Dugan—AT&T

C. H. Elmendorf—AT&T
R. W. Hendrickson—WE Co.

Coordinating Committee

W. M. Bacon—BTL
C. L. Coyne—WE Co.

D. H. Erickson—AT&T
T. E. Lyday—AT&T

Visitors

C. E. Hugel—N.J. Bell
R. P. Reuss—Ill. Bell
A. V. Smith—PNB
D. H. Walston—WE Co.
A. E. Spencer—BTL
J. W. Schaefer—BTL

R. M. Kemp—AT&T
R. D. Williams—BTL
W. Schiavoni—AT&T
E. C. Deutschle—WE Co.
W. J. Rinkor—AT&T
J. B. O'Boyle—AT&T

Competition and Rates

Mr. R. M. Kemp, Market and Service Plans, explained that almost 10% of PBX in-moves now involve direct competition, and we are currently losing over 60% of these competition cases. About half of these losses are in the territories of the Pacific, New York, and Pacific Northwest Companies. At the end of 1970, we will have lost approximately 500 systems; nearly 30% of these are in the hotel-motel market.

Mr. Kemp stressed that an improved customer switching plan is needed to respond to expressed customer needs, to meet competition, to reflect actual investment and improve profitability, and to accommodate immediate changes and future innovations.

Some charts were shown comparing per-line investment for various Bell and Non-Bell PBX systems to the investment supported by the current series 100 and series 300 rates being used in the Companies.

The following plans were outlined:

Short term—continue packaging concept—it has field support, get series 100 filed (only 18 states now have it) 805A and any other low cost vehicle will help: existing hardware prices must be adjusted, restructure present series 200 and 300 packages, offer features individually or at lower package rate; offer more package flexibility, develop a DID/AIOD PBX offering.

Long term—continue effort to reduce cost of electronic PBX's. (need the flexibility)—develop low-cost capabilities to offer: all features as individual options to series 100; all features optionally on "per station" basis; modular growth, develop pricing options, front end loading; lower rate after "X" years; separate maintenance visit charges, introduce usage oriented service.

EXECUTIVE POLICY COMMITTEE MEETING OF OCTOBER 4, 1971

Present: Messrs. Rowes, Lilley, Lindholm, Moulton, Owens, von Auw

Absent: Mr. deButts

Guests: Messrs. Bossack, McKay, Dugan, Boettinger, Hohmann, Byers

With a view of eliciting guidance in the further implementation of Bell System interconnection policy, Messrs. Dugan and Hohmann outlined the criteria that have governed the development of Bell System connecting arrangements thus far and outlined the current outlook for certification of customer-owned PBXs.

Among the matter on which policy direction was sought were: the applicability of current interconnection criteria to all classes of service (including residential); the dilemma passed by the high revenue requirements for connecting arrangements in the light of our stated policy of imposing no economic barrier to market entry; the pace of further movement toward interconnection liberalization; and Bell System objectives with respect to certification of customer-owned terminal equipment.

Pending further discussion of these matters, a number of the Committee's members expressed the view that extension of interconnection liberalization to the residence market needs to be approached with extreme caution. While the Committee recognized the plausibility of the assertion that the solution of the complex interconnection problems associated with PBXs removes any rationale for denying interconnection in simpler situations (viz—residence stations), it nonetheless remained of the view that opening up the prospect of widespread neglect of maintenance considerations—might well present a more serious risk of service deterioration and a greater hazard to network performance than does the business market.

CUSTOMER PRODUCTS COUNCIL MEETING OF NOVEMBER 18, 1971

ATTENDING

Visitors

Council Members

G. Accettura—WE Co.

J. A. Baird—BTL

R. T. Dugan—AT&T

C. R. Williamson—AT&T

Coordinating Committee

N. A. Adams—AT&T

W. M. Bacon—BTL

D. H. Erickson—AT&T

J. J. Pappas—WE Co.

D. H. Walston—WE Co.

N. E. Vogt—AT&T

Visitors

J. P. Burke—AT&T

S. R. Collis—AT&T

G. M. Fisher—BTL

P. C. Henne—AT&T

M. G. Killoch—AT&T

F. C. Knight—AT&T

T. L. Powers—BTL

J. W. Schaefer—BTL

L. L. Singer—BTL

A. E. Spencer—BTL

R. E. White—AT&T

The following items were discussed:

Network Access Pricing

Mr. Dugan outlined the concept of Network Access Pricing as it has been proposed to the Executive Policy Committee, the Cabinet and the operating Company Presidents.

The plan was described as a three phase operation: Phase I—"Unbundling"; Segregate tariffs into line and station components; No change in charge to customers

Phase II—Price and Procedural Adjustments: Make station equipment rates compensatory; Raise access line rates.

Phase III—Certification and Open competition.

Mr. Dugan emphasized that the Presidents authorized complete NAP planning, but did not authorize any tariff filing without prior review by the EPC.

TARIFF REVIEW COMMITTEE MEETING ON FEBRUARY 23, 1972

Those in attendance were: Messrs: Owens, Moulton, Bonsack, Emerson, Collins, Greber, von Auw, Garlinghouse, Elmendorf, Howett, Byers, Burke, Cohen, Garfinkel, Embry, LeVan.

The first subject concerned four questions pertaining to certification of customer-provided equipment. The leader for the discussion was Mr. Dave Byers of Federal Relations. Four basic questions were considered and the answer to each of them was NO. The questions were: Should Bell voluntarily modify its tariffs to incorporate standards and certification procedures in lieu of continuing to insist on a formal rule making proceeding if certification can be implemented? Should the Bell System undertake the installation of customer-provided equipment if a certification program is adopted? If certification is adopted will Bell perform the installation, inspection and the periodic maintenance inspection? Should the Bell System (Bell Labs) perform the "certification" functions for customer-provided equipment rather than insist on an independent laboratory for certification?

EXECUTIVE POLICY COMMITTEE MEETING OF JUNE 23, 1972

Present: Messrs. deButts, Lilley, Lindholm, Moulton, von Auw
Also: Messrs. Bonsack, Boettinger, Dugan, Ehrlich, Tunstall, L. N. Wilson

Mr. L. N. Wilson of the Market and Service Plans Department presented a "decision tree" designed to elucidate the alternate courses the Bell System might pursue with respect to interconnection of customer-owned terminal equipment (see AvA files). More particularly, Mr. Wilson's presentation focussed on the potential consequences of acceding to—or indeed embracing—"certification" vs maintaining current prohibitions against interconnection in the absence of a telephone company-provided connecting arrangement.

Mr. deButts counselled against accepting the "inevitability" of certification, pointing out that the only supportable criterion of decision on this matter is the long run interest of the general body of Bell System customers. In his view the customer's interest would be best served by whatever course of action would most effectively maintain the principle of end-to-end responsibility for service.

EXECUTIVE POLICY COMMITTEE MEETING OF NOVEMBER 9, 1972

Present: Messrs. deButts, Lilley, Lindholm, Owens, von Auw.
Also: Messrs. Betteridge, Dugan, Sullivan, Bartlett, White.

2. Mr. Dugan and Mr. Sullivan reviewed the progress of Network Access Pricing plans and the schedule for their completion. Mr. Bartlett (Comptrollers) outlined the principles underlying the development of the Functional Accounting necessary to Network Access Pricing and the status of the very considerable effort required for the development of such a system. A number of the Committee's members observed that, even in the absence of a requirement for Network Access Pricing, Functional Accounting is urgently needed to provide the companies readier information than current ad hoc studies provide with respect to the cost and profitability of their products and services. It was also observed that Functional Accounting will provide a basis for the development of formalized cost reduction programs and employee incentive programs that might afford significant capital and expense savings. Taken together, these considerations warrant an examination of the degree to which the development of Functional Accounting can be expedited and at what cost.

EXECUTIVE POLICY COMMITTEE MEETING ON APRIL 6, 1973

STIPULATION OF FACTS REGARDING ESTABLISHMENT OF AT&T STUDY GROUP

I. Following extended discussion and on the premise that retaining a manufacturing function is essential to the Bell System's ability to meet the public's interest in high quality telephone service at reasonable cost, the Executive Policy Committee* agreed on April 6, 1973, to establish a study group to

Assure development of the most effective rationale (with supporting evidence) for maintaining the present relationship of the Western Electric Company to AT&T, Bell Laboratories and the operating companies.

Undertake an objective study of the degree to which opportunities for other manufacturers to participate in supplying the Bell System might be expanded, together with an appraisal of the cost and service consequence of doing so.

Examine the means by which, in the event that competition in the supply of telephone equipment should be formally decreed, the Bell System might implement such a system with the least adverse effect on customer service and the health of the business.

Recommend what course of action with respect to facilities procurement will best assure the Bell System's ability to fulfill its responsibilities to the public.

II. In connection with the above, the following statement appeared in AT&T Management Report of November 1, 1973:

"Walter B. Kelley, vice president-operations of Long Lines, will organize and direct a study of the organization structure and methods currently used for the centralized procurement of telecommunications products for the associated Bell companies.

"He will recommend whatever changes, if any, will best assure that the Bell System's service and cost responsibilities continue to be fully and objectively met.

"The study will be made for F. Mark Garlinghouse, AT&T vice president and general counsel, to provide data for his evaluation of what method and structure will best assure the Bell System's continuing compliance with anti-trust laws in respect to the procurement of equipment by Bell System companies.

"Kelley will report to AT&T Vice Chairman William L. Lindholm."

III. The study for AT&T's vice president and general counsel has not been completed.

EXHIBIT 7.—*New Jersey Bell Memo Re Package Rates for Key Telephone Service*

Memorandum

Subject: Negotiation Guidelines.

I. PACKAGE RATE INTRODUCTION—LESS THAN PACKAGE FEATURES

On the effective date, customers will be billed the new "package rates" for Key Telephone Service, but in fact may not have all of the features which are included in the monthly package rate.

The following conditions may then be encountered.

A. Customer is billed the illuminated line charge (LNB) at \$3.00 per line, but:—

1. Lines are not equipped for wink holding operation.
2. Lines are not equipped for line holding operation.
3. Lines are equipped for busy line or incoming intermittent or continuous line operation only, but not both.
4. Six button stations are not equipped with lamps.
5. Six button stations are not equipped with holding button.
6. Stations do not have six button sets, but rates for six button sets apply.

B. Customer is billed nonilluminated line charge (LBW) at .50 per line, but:—

1. Lines are not equipped for line holding operation.
2. Six button sets are not equipped with holding button.

* Present at the April 6, 1973, EPC meeting were Messrs. deButts, Lilley, Lindholm, Owens, Garlinghouse, von Auw, Boettinger, McMains, Procknow.

C. Customer is billed a manual intercom charge (NJC) at .75 per location equipped for manual intercom service and/or local signaling, but:—

1. System does not have a manual intercom line—signals only.
2. Signals and/or buzzers are missing or inadequate at some locations where charge applies.
3. Some locations do not pick-up manual intercom line—but six button set charge is being billed.

RECOMMENDED NEGOTIATION PROCEDURE

On and after the effective date of the change to "package rates", negotiators should be guided by the following.

1. When any *customer request* is received for the addition to, move, change, or disconnection of existing key stations:—the negotiations, quotation of charges, and issuance of orders should be *confined to the customer request*. *The negotiator should not initiate discussion of the "package rates", the features included in the rate, NOR OFFER TO ADD MISSING FEATURES.*

2. *Customer requests for an explanation of the "package rates" and/or features included should be confined to the package rates and features applicable to that customer's existing key system. Do not stimulate changes.*

If such explanations result in a customer request for addition of missing features—the established nonrecurring charge for such work should be quoted and added to the KS order for other work or a KS order issued for such additions if the only work being done.

3. *Company-initiated contacts*—particularly those involving outside consultant or competitive situations should include an explanation of the "package rates", the features included, and a recommendation to add missing features or other changes based upon developed need. Established nonrecurring charges will apply. KS orders should include the additions or changes agreed upon.

4. For all new key systems negotiated on new connects or "T" orders—the "package rates", features included, and options must be explained.

All features available under the "package rates" should be provided and exceptions avoided.

The preceding guide lines have also been given to Plant Installation and Repair Forces.

EXHIBIT 8.—A.T. & T. Memos Re Purchase of PBX's of Other Than Western Electric Manufacture

AMERICAN TELEPHONE & TELEGRAPH Co.,
March 17, 1970.

To: Operating Vice Presidents.

From: Assistant Vice President—Engineering A.

At the recent Operating Vice Presidents' Conference, I discussed our plans for a family of Bell System designed electronic dial PBX systems, and also indicated that I would be sending you some material with respect to PBX's of other than Western Electric manufacture.

A number of the Operating Companies have expressed interest in the use of non-Bell PBX's to meet service commitments. Attached for your information is a letter describing the arrangements which have been made whereby Western Electric will purchase PBX's of other than their manufacture for the Operating Companies when requested to do so. Also covered is service feature and capacity information for non-Bell PBX's for which information is available.

C. R. WILLIAMSON.

AMERICAN TELEPHONE & TELEGRAPH Co.,
New York, N.Y., March 30, 1970.

Subject: Purchase of Non-Bell PBX's.

To: Engineering Staff Heads.

From: Engineering Director—Customer Telephone Systems.

Synopsis: Transmits service feature and capacity information on PBX's of other than Western Electric manufacture and describes arrangements for Western to purchase for the Operating Companies.

At the Chief Engineers' Conference in November, 1969, and the Operating Vice Presidents' Conference in February, 1970, plans for a family of Bell Sys-

tem designed electronic dial PBX systems were discussed. The 800A and 101 ESS are currently available and both the 805A and 810A will be in production in the 1971-1972 period. In addition, a new 200 to 300 line system, called the 801A, is under study with expected availability in 1971.

It is our understanding that a number of the Operating Companies are interested in non-Bell PBX systems to meet service commitments. In this connection, arrangements have been made for Western Electric Company to purchase PBX's of other than Western manufacture for the Operating Companies when requested to do so.

Among the many factors to be considered regarding the use of non-Bell PBX's are:

Traffic capacity of trunks, switching network, common control, etc., at quoted line sizes.

Adequate and continuing documentation.

Equipment reliability.

Transmission performance.

Growth and feature flexibility.

Training for installation and maintenance forces.

Operation and administration.

The attachment to this letter contains service features, line and trunk capacities and physical size data for non-Bell PBX's for which information is available. The data has been obtained basically from manufacturers' sales literature and we do not represent with certainty that all figures are accurate. We intend to distribute this information in a loose-leaf binder, in the near future and to insure distribution control, these will be numbered. The information will be kept up to date.

It will also be distributed by the Western Electric Company to Service Manager's organizations at Service and Regional Centers. The Western Electric Company Customer Service Organization at Service or Regional Centers will provide additional information such as price, availability, and detailed technical data, on request.

The Western Electric Company is prepared to purchase non-Bell PBX equipment on a Telephone Company Engineered basis if requested by the Operating Company in accordance with standard procedures applying to commercial products. When the Operating Company places a TCE order on Western, the Purchasing Organization will contact the non-Bell manufacturer to negotiate F.O.B. terms and other conditions. Provision for spare parts, repair, installation, maintenance and service, etc., can also be included in the negotiations. The Pricing Organization will furnish prices.

If you have any questions or comments, Matt Pungertchar on 212 393-8138 will be available to discuss them with you. In addition, would you please, at your earliest convenience, advise him of the number of permanent binders you wish and the address of your distribution point.

This letter is also being sent by Mr. C. R. Williamson to a special mailing list.

W. SCHIAVONIE,
Engineering Director.

EXHIBIT 9.—*Correspondence Between Illinois Bell and Barbara Hirsch Re Alleged Harassment After Obtaining Interconnect Equipment*

CHICAGO, ILL., July 11, 1974.

Certified Mail-Return Receipt Requested

Mr. THOMAS R. PHILLIPS,
Illinois Bell Telephone Co.
Chicago, Ill.

DEAR MR. PHILLIPS: It is clearly Illinois Bell Telephone Company's intention to harass me for my representation of Private Tele-Communications, Inc. as its lawyer in the Illinois Commerce Commission, Federal Communications Commission, other government agencies and in the Circuit Court of Cook County, Illinois and further because I have obtained interconnected equipment from my client, Private Tele-Communications, Inc. in my office. It is clearly your intention to interfere with my practice of law and to cause me serious monetary injury.

I have learned that directory assistance was not advising people of my office telephone number. I immediately verified this personally by calling "information" and learning that "information" was not listing my office telephone number. I then immediately contacted the supervisors at Illinois Bell Telephone Company and attorney, Thomas Phillips, for Illinois Bell Telephone Company and was assured that the matter was corrected. Today I telephoned "information" again and again my number was not listed with "information" although when I pursued the matter I was told that it was "a new listing." My number was given only after fully identifying "Barbara B. Hirsch, attorney, at 208 South LaSalle Street, Chicago, Illinois." It should not be necessary for a person calling directory assistance to know the address of an attorney that person seeks to reach and to refuse to accept the operators statement that there is no such listing.

I have now received the Chicago Telephone Directory, 1974, and I find no listing whatever for Barbara B. Hirsch, 208 South LaSalle Street, lawyer. Your omission of my name and address from the telephone directory can only be interpreted as an intentional effort to harass me and punish me for my representation of my client and my obtaining of interconnected equipment.

I expect a response to this letter by July 15, 1974. I expect that letter to contain an appropriate solution. I suggest that you determine a means of reprinting the telephone directory and immediately delivering it to subscribers with the inclusion of my name, profession, address and telephone number or your determining another means to notify every subscriber of the omission. I look forward to your response.

Yours very truly,

BARBARA B. HIRSCH.

ILLINOIS BELL TELEPHONE CO.,
Chicago, Ill., July 15, 1974.

Ms. BARBARA B. HIRSCH,
Chicago, Ill.

DEAR MS. HIRSCH: Your letter dated July 11, 1974, contains several false conclusions. Because you gave your letter such wide distribution, I do the same with my response.

Illinois Bell has not harassed or "punished" you, nor do we intend to do so. Considering the multitude of court and commission complaints you have filed on behalf of various clients against Illinois Bell—together with other contacts you and your clients have had (for example, with the Senate Subcommittee) without affording Illinois Bell the courtesy of notice or an opportunity to respond—I suggest it is *you* who have intended harassment.

With respect to the directory error your letter discusses, I acknowledge your calls to Illinois Bell's business office on June 24 and to me on June 25 and July 10. Had you given me an opportunity between your foul and intemperate language and your hanging up on me in our telephone conversation last week, I would have given you the following details.

The omission was an error in directory compilation. An order was placed in March 1974, to remove certain listings for the Chadwell firm. Although you were no longer associated with that firm, the telephone records had not been changed accordingly and therefore continued to contain your name. Although the proper correcting order for record purposes was issued, your present listing was inadvertently omitted when the directory listings were removed in March. The omission remained until your June 24 call to Illinois Bell's business office.

Immediately after that call, our Directory Assistance records were revised. Your name was added to the Daily Addendum section on June 25. Your name was incorporated in the "H" alphabetical section when that section was totally reprinted in the normal course of business about two weeks later.

As of June 24, the date of your first call, the first directory press run of the 1974 Chicago Alphabetical Directory was already being distributed. When, as a result of your call, Illinois Bell called the error to the printer's attention, the page was reset. Subsequent press runs will contain your listing; I will see that you get a copy shortly.

I hope, Ms. Hirsch, that you will be fair enough to withdraw the untrue charges of harassment which you have so widely distributed.

Very truly yours,

THOMAS R. PHILLIPS.

ILLINOIS BELL TELEPHONE Co.,
Chicago, Ill., July 19, 1974.

MS. BARBARA B. HIRSCH,
Chicago, Ill.

DEAR MS. HIRSCH: Delivered with this letter is a copy of the 1974 Chicago Alphabetical Telephone Directory bearing your listing.

It is my understanding that distribution of the second press run of this book began earlier this week.

Very truly yours,

THOMAS R. PHILLIPS.

EXHIBIT 10.—*Southern New England Telephone Co. Publication Re Competitive Threat of PABX's*

APRIL 15, 1971.

COMPETITION: THE NAME OF THE GAME

BY JOHN WHITE

SNET faces four forms of competition: (1) vendors of communications systems which do not connect with our network, (2) consultants who operate on a cost-cutting basis, (3) companies selling equipment or services which connect directly with our network, and (4) companies attempting to build alternate networks.

The first type of competition is not much of a problem. The second was once the major competitive threat to our business, but its now quite minor. The third type poses a major challenge. Now that private companies can interconnect with the Bell System network, the sale of rival terminal equipment such as customer-owned PABX's will increase quickly. (PBX stands for private branch exchange and applies only to Bell System-manufactured equipment. Competitor equipment is referred to as PABX.) Alternate networks, which could possibly interconnect with our network, are not yet a threat in Connecticut, but are just below the horizon.

THE MAJOR CHALLENGE

Rival PABX's are now our major competitive concern. According to Abbott Davis, vice president-marketing. "In the last year and a half, the competitive activity we've seen has shifted heavily in types of sales. Before, one out of three of our competitors' sales was a PABX. Now, three out of four are PABX's. That's because we're dealing with larger, more sophisticated competitors. Their salesmen are smart—many of them were Bell System trained. They're good salesmen who provide quality service, and they're marketing for reputable firms like IT&T, Stromberg-Carlson, Norelco and Ericsson of Sweden."

Davis observes further that a real threat, competitively speaking, comes from a host of Japanese equipment manufacturers such as Hitachi, Fujitsu, Meisei and Nippon, who market and distribute through U.S. firms. Their PABX systems tend to be inexpensive, compact, attractive, reliable and technologically advanced. Moreover, these companies provide excellent technical backup and modification capability. The Japanese have made great inroads in the hotel-motel and retail markets across the country.

"But right now," says Davis, "IT&T is our major competitor. Their interconnection headquarters is in Hartford. Being a large company, IT&T is offering an array of attractive PABX equipment. Besides the TE400, an electronic PABX, the IT&T folks have introduced the Pentomat family of Spanish-made crossbar PABX's which have capacities that range from 40 to 9,000 lines. The Pentomat 600 is an especially competitive offering since it blends desirable PABX features with a sellable price or leasing option."

NETWORK COMPETITION—THE FOURTH FORM

There are now more than 1700 applications before the Federal Communications Commission requesting entry into the microwave common carrier field. A typical entry is for a franchise to operate a public microwave route between two or more large cities, with connecting facilities between the microwave ter-

minals and subscriber locations provided by the local telephone company. No Connecticut-based company has any such application, but Microwave Communications, Inc. (MCI) has applied for a Boston/New York route coming through the center of the state via Hartford, New Haven and Stamford.

"Think of the business that exists along that route," says Bob Little, general marketing supervisor. "This is the 'pipeline' where most of our volume users are located. Our rates for intercity services are based on a rate concept of cost averaging. When a competitor is allowed to skim off the volume traffic from heavy routes, the rate structure becomes unbalanced. To compete fairly, we might have to go to individual route pricing."

REGULATED VS. FREE COMPETITION

At present, competitors are almost completely free from FCC regulation—quite the opposite of the Bell System's position. Bell System prices are fixed by regulation, but a competitor may deliberately sell at a loss, just to get into a market. Should the Bell System be regulated in areas where it competes while its competitors do business without regulation?

And in the matter of microwave transmission, should the business be open to all comers? If not, should it be limited to a specific number? If so, how many? Further, what should be their qualifications in terms of capital, personnel, equipment and ability to serve?

"It's possible that some regulatory decisions would force the Bell System into an uncompetitive position," says Davis. "If competition is going to be regulated, we ought to compete on the same terms as our competitors. Regulations have got to apply equally to all. Otherwise it's not competition."

MEETING THE CHALLENGE

During the past year and a half, marketing has geared up to meet competition. It has established a competition group to track and analyze all cases of competition and proposals by other companies. It has put all salesmen through a course in meeting competition. A third step has been the development of a lease vs. buy financial analysis program for the use of its salesmen. This program shows which proposal—the competitor's or ours—would give the customer the best rate of return on his investment. But it is the individual salesman's aggressiveness with competitors and concern for customers—the way he services his accounts—which ultimately wins the bid. So far, marketing has a success record of 92% for PBX competitive situations.

But to maintain our top position in the market, everyone—management and non-management alike—has to start thinking in new ways. "Marketing is a function of the whole business, especially our employees who have contact with customers," Davis points out. He says that marketing is not only a department but a process of meeting our customers' communications needs better than the competition can. "The marketing department handles certain aspects of marketing, but not all. For example, we don't set rates. The revenues department does that. And pricing is a critical ingredient in the marketing formula."

The engineering department has a marketing function also. One problem of marketing is to keep costs down, and engineering has done a fine job of that, Davis notes. Their evaluation and introduction of Japanese switching equipment is, in his opinion, one of the most significant marketing advances in the last two years. "Putting the Nippon equipment into our product line has reduced our cost of doing business. It has allowed us to pass this on to the customer and to offer more favorable service intervals."

The plant department, too, is involved in marketing. "How can we sell sophisticated equipment to a customer if his basic service is below par?" Davis asks. "Suppose he can't get dial tone or repair is slow in responding to his request for service. Things like that can send him right into the arms of a competitor."

LOOKING AHEAD

Although our PBX business will continue to grow, it is probable that our share of the total market will decline. When SNET was the only one in the field, we had 100% of the market. But the first sale by a competitor meant we no longer had 100%. To be more effective in meeting competition, changes will have to be made, Little believes. The most likely are:

Liberalized tariffs. "Anything that competition can provide we ought to be able to provide also. For example, joint users who share the service of a single PBX or private line enjoy certain economies. In Hartford; Rensselaer Polytechnic Institute's branch and the Center for the Environment and Man intend to share a single switcher, and we've filed a tariff in support of this request." The revenues department is investigating further possibilities for liberalizing tariffs to make the transition to a buyer's market.

Changing rate plans. "Hopefully we will be competing armed with the same variety of price options and terms of service available from other vendors."

New products. "Originally the telephone was bought for its utility value, but now that's changing. Decorative value is increasingly important to customers. We're a \$300 million a year company, but we have only two telephones in the premium line—the Princess and the Trimline. We have a market trial of decorator sets coming up in May in the Stamford area. This will be an attempt to broaden our residence product line."

NO TIME TO RELAX

In spite of SNET's success in meeting competition, Davis is anything but complacent. "The year and a half experience we've had in competitive marketing is only a warm-up. In a few years we'll see some of the finest and most reputable businesses in the country competing for a share of the action. We're committed to all of our markets right now, and we're doing a very good job of maintaining them. But if we find it unprofitable to stay in a certain area of the communications business, then we should ask ourselves whether it is in the mutual interest of customers and the company to withdraw from that area."

EXHIBIT 11.—*Letter From Southern New England Telephone Co. and A.T. & T. Re Purchase of Non-Western Manufacture PBX Equipment*

THE SOUTHERN NEW ENGLAND TELEPHONE CO.,
New Haven, Conn., January 14, 1972.

MR. S. E. BONSAK,
Vice President, American Telephone & Telegraph Co.,
New York, N.Y.

DEAR SAM: Your letter of November 11, 1971 to Mr. Van Sinderen, discussing required action in the PBX area, struck a very responsive chord in SNET. We have been active, and I believe successful, in competing aggressively and more profitably in the business market. I am therefore able to advise you not only of our future objectives in this area but also of actual accomplishments.

Some three years ago we foresaw the need to reshape our thinking in the PBX area so as to better meet customer needs, improve profitability, and meet future competition. New, lower cost PBX equipment was a necessity if we were to make any real progress toward these objectives. Unfortunately, such equipment, which also offered additional advantages such as compactness and short procurement intervals, was not available from the Western Electric Company. We therefore pursued other possibilities which culminated in our adoption of the Nippon Electric Company NA4-09 and NEPAX-100 PBX equipment as prime serving vehicles. (First installations were in May 1970.)

Coupled with this action was the filing of our Series 80 tariff. (Series 80, filed in May 1970, is a basic service offering similar to the Series 50 which was outlined in letter GL70-12-015 dated December 1, 1970.) As Series 80 is based on the less expensive NEC vehicles, it is a very competitive and yet profitable service. (The lower cost NEC vehicles also, of course, improved the rate of return on our Series 200 and 300 offerings.)

All this, along with aggressive and innovative Marketing action, has resulted in a win-loss ratio in competitive PBX cases of 10 to 1.

As regards the problem of low line fills mentioned in your letter, we believe the answer lies in a properly structured tariff. Our approach has been to modify our existing Series tariffs so that the PBX switching equipment is supported by a monthly "common equipment charge" based on the equipment actually installed. The per station charge no longer contributes to supporting the PBX common equipment. We call this "line banding" and introduced the concept in our 1971 general rate increase filing. In conjunction with that ac-

tion we also reviewed our Series 200 and 300 tariffs to make any other necessary adjustments to insure a desirable rate of return.

The above covers in broad terms what we have done to date. We also recognize there is more to do. Right now there is an interdepartmental team working on a plan to unbundle PBX features and to consider possible tariff concepts such as "guaranteed rates" for specified contract periods. A preliminary plan will be developed by the end of January 1972, and we will keep your people advised. After this will come a review of economic and competitive considerations in providing business service from the Central Office versus from equipment on the customer's premises. Even on completion of these plans we see no room for complacency. There will be more to do. The business market is one of the most challenging and dynamic areas of our business and in SNET we plan to keep it competitive and profitable.

The System took a big step in this direction with the development of the 770A and 805A PBX's. From what we've seen they're good machines and appear to be competitively priced. However, as I mentioned previously, we are presently using NEC PBX's which are very similar to the new Western Electric vehicles and we do not anticipate a requirement for either the 770A or 805A through 1972. This is based on the following considerations:

1. The NA4-09 and NEPAX-100, of which 223 have been installed, are very nicely meeting our needs at this time for the under 400 line customer.

2. The W.E. Co. vehicles do not at this time offer a significant advantage as regards to features, maintenance, operations, or cost.

3. "Getting started" problems can generally be anticipated throughout the introductory phase of any new PBX. With no overriding "need", we would just as soon avoid such problems.

4. The 770A is not now available in the quantity required to meet our customers' needs. Allocation of systems, especially Series 300, will continue into 1972. SNET has maintained an excellent record over the past two years in meeting customers' requests for PBX service. We cannot afford to get into a situation such as experienced in 1969 when shortages of W.E. Co. PBX equipment made it extremely difficult to meet our service commitments.

We will, of course, maintain a continuing interest in the 805A and especially the 770A. We will follow closely reports of performance, *firm* vehicle prices as they are published, and the actual availability of vehicles in all Series offerings.

My people would be pleased to discuss any phase of the PBX area in more detail and look forward to participating in the tele-conference which you are planning.

Sincerely,

R. W. HUEBNER.

EXHIBIT 12—A.T. & T. Correspondence Re Automatic Call Diverters

FEBRUARY 21, 1973.

Mr. W. SCHIAVONI,
Engineering Director,

DEAR BILL: For some time now, we have received complaints from the Telco's regarding the lack of sufficient or inexpensive toll restricting devices. Consequently, we decided to determine the demand and price sensitivity of this market. We asked each of the Product Managers in the Operating Companies to examine this market and give us a 5-year forecast of their requirements. In addition, we asked that they determine the price sensitivity of this service and outline other requirements such as TOUCH-TONE® and 2-, 3- or 4-digit translation.

Attachment A is a summary of their forecasts and Attachment B lists the details of their other requirements, such as TOUCH-TONE and 3- or 4-digit translation. At the optimum price we can expect to sell about 1000 units per year which appears to be sufficient demand to warrant development of such a device. The "other requirements" point out a need for 3- and 4-digit translation and TOUCH-TONE capabilities. Our recent market survey confirmed this information, however, it lacked the details of price elasticity. It also pointed out that such a feature should be provided on an optimal basis which will fit into our plans for the new product line, should it be designed to be compatible.

Based on these two studies, we recommend development of this item as

quickly as possible. We understand Mr. Feiner at Holmdel is active in this area, therefore, we forwarded a copy of the study results to Bell Laboratories.

Yours truly,

R. W. KEMP,
for W. J. RINKOR.

Attachments.

MAY 18, 1973.

Mr. A. FEINER,
*Director, Customer Systems Laboratory,
Bell Telephone Laboratories
Holmdel, N.J.*

DEAR MR. FEINER: During the past few years, the Operating Companies have received a growing number of requests for a PBX toll controller to limit certain PBX stations from making calls to specific toll and DDS numbers. This type of restriction generally cannot be provided using our central office arrangements. As a result, a number of Companies have locally developed PBX call controllers to meet this demand (refer to Mr. C. J. Nickelsen's letters to Mr. A. E. Spencer dated 5-21-72 and 2-14-72).

In the past, we have been reluctant to ask for development in this area because of the limited demand for this service and the several alternate arrangements that are available. However our Marketing people have confirmed the growing need for this service in a recent survey, copy attached, and now estimate a demand for about 1000 call controllers per year for the next five years. As their study shows, this demand is very price sensitive. They have also included data on requirements for three and four digit transition, trunk capacity and TOUCH-TONE application.

We concur with these findings and recommend that you undertake studies immediately to determine whether one or a family of PBX call controllers can be developed to meet the price and feature objectives. In order to expedite your studies, you may wish to again review the Pacific Telephone design that was submitted for your analysis. Their original design was rotary dial only but they have recently modified it for TOUCH-TONE application as well. Your Mr. Ralph Carlson is familiar with this development as well as the requirements developed by the Telco CUE Committee.

We have recently assigned an "A" priority to this item on the "PBX Grocery List of Developments."

Please let us know your findings as soon as possible so that we can make plans on our future course of action.

Original signed by:
W. SCHIAVONI.

Attachment
cc: A. E. Spencer

MARCH 6, 1972.

MR. J. W. KIRCHHOFF: We would like to get a final clarification of the Bell System Marketing position regarding provision of Toll Restricted service.

As you know, various combinations of PBX/CTX and CO equipment provide control of toll calls on several different bases, which include what were formerly called "restricted" (from all toll calls) and "diverted" (from selected dial codes only) types of service. These are provided through various types of additional peripheral equipment or reliance on particular signals from the serving CO.

Because of this diversity of approaches and, in some systems, complete lack of the diversion capability, we have been requested to evaluate the feasibility of standardizing the toll diversion approach for all systems.

It appears, however, that at one point in time the "195" position was that we should not devote any effort to the feature which has the effect of inhibiting our revenue potential. More recent conversations have indicated that the customer's need for toll restriction capability dictates that we should provide the feature in an optimum arrangement, as we normally strive to do with any offering.

We would appreciate a statement at this time regarding the Marketing organization's position in order that we may decide whether a development request is in order.

C. J. NICKELSEN.

MOUNTAIN BELL,
Denver, Colo., August 24, 1972.

Mr. W. J. RINKOR.
*Marketing Director,
 American Telephone & Telegraph Co.,
 New York, N.Y.*

DEAR MR. RINKOR: Historically, free access to the toll network from exchange services has been an assumed part of the basic service. The exceptions were PBX and Centrex service, where access to toll could be restricted to an attendant.

In a monopolistic atmosphere, the Bell System could, with impunity, decree that unlimited access to the toll network was an inherent part of basic service, and refuse to provide any form of toll restriction. However, with the advent of interconnection, two new circumstances have arisen.

A. The customer who elects to provide his own terminal equipment—PBX, key or station—can equip that service with any form of toll restriction he chooses.

B. The customer can purchase from other suppliers (such as Phonetel, Inc.) a device to connect between the exchange line and our station equipment that will divert or deny toll calls. This, of course, is prohibited for technical reasons until such time as an adequate connecting arrangement can be designed.

In addition to the above two cases, which seem to make it illogical to continue refusal to provide such a service, we feel the following observations are pertinent:

A. Mountain Bell Engineering has designed a circuit that they feel will provide trouble free service with any type of exchange line, with or without TOUCH-TONE (see attachment).

B. Provision of this service could enhance our competitive position in the key telephone market.

C. Provision of such an arrangement could tend to reduce the number of call verifications requested by business customers.

D. It has been suggested that our customers want this service simply to enhance or eliminate the need for their own internal administrative controls. This, of course, is true, but so is the provision of Centrex AIOD and Special Billing Numbers. Therefore, this should not be an argument against providing the service.

E. A question has been raised regarding Flat Rate Abuse, and the possibility that station placement for public access on the customer's premise may be creating part of the problem. The possibility exists, although our policy has been to insure that stations were not placed in such locations. However, with interconnection, the customer can place his stations anywhere he wants.

Because of the above, we are beginning to receive requests for a similar service with our terminal equipment. We can find no specific policy statement or tariff restriction prohibiting such a service, but realize that it has System-wide ramifications.

We have discussed this matter with Messrs. Fred Levan, Armo Nixon, Herm Goedrich and Roger Fuller and, after a telephone discussion with Bob Hess, have determined that the most effective way to develop the policy will be for your people to completely review all of the potential benefits and problems; and, if you agree, formally establish the policy in writing. We would appreciate your reply at the earliest possible date.

Bill Corbin, 303 266-7413, is familiar with this matter and can answer any questions you may have.

Yours very truly,

R. H. HEATH,
Assistant Vice President.

Attachment.

EXHIBIT 13.—A.T. & T. *Memo Re Future Monetary Value of PABX Segment of Interconnect Industry*

A/2 MARKET SPECULATION BY I/C COMMUNICATIONS

I/C Communications in conjunction with Specialized Communications Services, Inc., consulting firm located in Eastchester, N.Y., presents these estimates, from 1975 to 1980.

ASSUMPTIONS

1. A total PABX universe of 250,000 systems by 1980.
2. The average cost of a 100-line system placed at \$80,000.
3. Interconnection accounting for 16% of the universe, or 39,000 customer-owned units.
4. PABXs of 500-and-over lines and key systems registering the biggest gains during a two-year period.
5. A market plateau by 1975, with growth rates decreasing.
6. A fairly static share of the market for interconnected systems by 1980.
7. The cumulative value of the PABX segment of the interconnect industry approximating \$3 billion by 1980.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Approximate percent of Universe.....	0.8	1.8	3	4	6	7.5	9.5	11.5	13	16
Percent growth.....		110	70	50	40	30	25	20	15	15
Additional systems.....		2,240	2,960	3,600	4,300	4,500	4,800	4,800	4,500	5,300
Number of systems installed.....	2,055	4,295	7,255	10,500	15,100	19,600	24,400	29,200	33,700	39,000
Cumulative value (in millions).....	\$100	\$200	\$400	\$600	\$1,000	\$1,300	\$1,900	\$2,300	\$2,600	\$3,000
Value per system (in thousands).....	\$50	\$50	\$60	\$65	\$65	\$65	\$70	\$75	\$80	\$80
Number line per system.....	65	68	78	85	90	90	90	95	95	100
New business dollars (in millions).....		\$100	\$200	\$200	\$400	\$300	\$600	\$400	\$300	\$400

EXHIBIT 14. — *Pacific Telephone Manual Comparing Bell With Non-Bell Equipment*

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PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET

WHO THEY ARE:

Arcata Communications, Inc.
Hdq. 850 Stierlin Road
Mountain View, California 94040

YEAR FORMED: 1970

BRANCHES: San Francisco, Menlo Park

BRIEF DESCRIPTION OF BUSINESS:

Sell, install, and maintain PBX, KTS, and intercom systems nationally. Wholly owned subsidiary of ~~Arcata National Company~~ (Wood & Wood Products) with resources of over \$200 million.

GENERAL DYNAMICS - they own STROMBERG-CARLSON

WHAT THEY SELL:

PBX	KTS	OTHER
Ericsson AKD 741	Arcata Custom Key 10-30	Intercoms:
Ericsson ARD 561	(Tie/Nitsuko)	
Ericsson CP 100	Voycall	Voycall
Nippon NEPAX 100		Centrum
Nippon NA 4-09		Ringmaster
Nippon NA 120		
OKI AC 120		
OKI AC 150		
OKI AC 220		
OKI AC 250		
Automatic Electric AE 40		
Automatic Electric AE 80		

WHAT MOST PROPOSALS CONTAIN:

FINANCE OPTIONS:

Cash Purchase

Lease

Lease/Purchase Option 5, 7, 10 years.

(Option usually 10 % of installed equipment costs at 10 years.)

A computerized analysis is often included in the proposal and usually adds a 3-5 % rate increase per year to our figures. Personal property taxes may or may not be mentioned.

MAINTENANCE/OTHER:

Warranty: 12 mos. (parts & labor)

Maintenance contract cost per month \$1.00-\$1.50 per system capacity, escalating approximately 5 % year.

Per call basis is about \$28 per hr. and may not include travel or parts.

Negligence and tampering are usually excepted on contracts.

Insurance sometimes included with the maintenance contract.

OTHER COMMENTS:

Arcata has branches in over 24 cities and subsidiaries that include Arcata Leasing, Continental Communications Construction and Telephone Plant Construction, (Tampa, Florida), and Jackson Communications (Brookville, Ohio).

Voycall (Oakland, Calif.), a manufacturer of intercom and KTS systems has been purchased by Arcata Communications. Future expansion of equipment is planned.

ADDITIONS, MOVES, CHANGES - ARCATA

This information should prove useful when confronted with an Arcata proposal. It should not be quoted but used to ask the right questions.

ADDITIONS - OUTRIGHT PURCHASE	LABOR	EQUIPMENT	TOTAL
1-Single-Line Touch-Tone Telephone	\$ 84	\$ 90	\$174
1-Single-Line Rotary Dial Telephone	\$ 70	\$ 57	\$127
1-Six-Button Touch Tone Telephone with Two Lighted Lines	\$168	\$431	\$599
1-Six-Button Rotary Dial Telephone with Two Lighted Lines	\$140	\$340	\$480
1-12 Button Rotary Dial Telephone with 5 lighted lines	\$168	\$711	\$879
1-Voycall Dual Channel Touch-Tone Telephone with Six-Button Key Strip Equipped with Two Lighted Lines	\$168	\$681	\$849
1-Voycall Dual Channel Touch-Tone Telephone	\$168	\$357	\$525
1-Voycall Dual Channel Touch-Tone Adapter for all Voycall Dual Channel Telephones	\$224	\$240	\$464

ADDITIONS - LEASE (10 YEARS)	MONTHLY	INSTALLATION
1-Single-Line Telephone (Rotary)	\$2.00	⊕
1-Six-Button Telephone (Rotary)	\$7.42	⊕

Expand from 120 station capacity to 150 line. \$8,114 or \$123 per month amortized over 10 years.

From 150 to 180 station line capacity. \$6,114 or \$92.93 per month for 10 years.

Equip a 120 line system (at cut) for Touch-Tone including the switching equipment and all telephone instruments. \$14,560 or \$221 per month for 10 years.

NOTE: Add sales and personal property taxes, maintenance, and insurance to all additions.

MOVES AND CHANGES

Single Line Telephone	\$20 Flat Rate
Six-Button Telephone	\$35 Flat Rate
12 & 18 Button Telephone	\$50 Flat Rate

NOTE: Rates may vary by area and an hourly rate of \$28 plus parts may be charged. Travel time may or may not be charged for.

DELETIONS OF EQUIPMENT - RETURNED FOR CREDIT SWITCHING GEAR

A declining percentage of original cost less installation costs.

TELEPHONE SETS

60 % of the purchase price of the set (not including installation costs). I.E., A set installed for \$127.00 is worth \$34.00 as a returned item. (\$127.00 - \$70 installation = \$57 X 60 % or \$34.00.)

Questions: Does this apply to purchased equipment only? And who pays for disconnecting the set?

PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET**WHO THEY ARE:**

Litcom - Business Telephone Systems Div.
 Division of Litton Industries
 1770 Walt Whitman Avenue
 Melville, New York

YEAR FORMED: 1961

(But active in this area since 1972)

BRANCHES: San Francisco**BRIEF DESCRIPTION OF BUSINESS:**

Litcom is the communications division of Litton. They sell, install, and maintain PABX and KTS systems. The PABX equipment is manufactured mostly by OKI Electrical Co. of Japan and the parts are assembled in Florida by OKI America. KTS is manufactured by Nitsuko of Japan.

WHAT THEY SELL:

PBX	KTS	OTHER
Litcom CB 240 (OKI AC120)	ITT	Intercoms
Litcom CB 440 (OKI AC220)	Stromberg-Carlson	Paging
Litcom CB 500 (OKI AC250)	Automatic Electric	
Litcom CB 300 (OKI AC150)	Litkey 10-30	
	(Tie-Nitsuko 10-30)	

WHAT MOST PROPOSALS CONTAIN:**FINANCE OPTIONS:**

- * Lease
- * Cash Purchase
- * Lease with Purchase Option
- * First and last 2 months paid in advance.

MAINTENANCE / OTHER:

Maintenance/warranty is included the first year.

An annual service contract is offered after that for approximately \$1.00 per month per station and is subject to increases yearly not to exceed 7%.

Litcom offers 4 hour service in emergencies. Hourly maintenance and repair rates are also offered.

Insurance protecting the seller is usually included.

OTHER COMMENTS:

Litcom is working on a new electronic switcher for PBX that should be available in 1973. Litcom's goal is to become the # 1 interconnect supplier in the nation by the end of 1974.

ADDITIONS, MOVES, CHANGES - LITCOM

Here are some interesting rates involving LITCOM on additions, moves, and changes and etc.

	(10 YRS) PER MONTH	FLAT
Cost to add 100 lines of common equipment to a PBX	\$123.40	\$ —
Add a non-button set	1.25	88
Add a 6-button set	3.20	231
Add a 12-button set	4.35	361
Add an 18-button set	8.50	621
Install a Speaker-Phone	5.30	—
Install an automatic dialer	7.50	—
Install Touch-Tone at cut (200 lines)	144.20	—

NOTE: Add sales and personal property taxes, maintenance, and insurance where applicable.

MOVES AND CHANGES

1. Moves and changes will be made free of charge (labor) during the preventative maintenance visits (up to 4 per year). These visits shall be scheduled for a maximum of 1 BUSINESS DAY.
2. Moves and changes not covered above will be billed as follows provided that at least two moves, arrangements, or changes are taken care of on that visit.
 - a. Either \$15 per hour plus expended material, or
 - b. \$15 per single line extension
 - c. \$25 per six-button instrument

PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET**WHO THEY ARE:**

Norelco (North American Philips Corporation)
 Communications Systems Division
 91 McKee Drive (Box C)
 Mahwah, New Jersey 07430

YEAR FORMED: 1963**BRANCHES:** San Francisco**BRIEF DESCRIPTION OF BUSINESS:**

U.S. Marketing arm for communications equipment manufactured by N. V. Philips of Holland. Services performed includes assembly, custom engineering, manufacturing, sales, installation, maintenance, and finance.

WHAT THEY SELL:**PBX**

Norelco (Philips)
 UH-30
 UH-45
 UH-300
 UH-900
 EBX 15

KTS

Stromberg or ITT made
 under Norelco trademark

OTHER**WHAT MOST PROPOSALS CONTAIN:
FINANCE OPTIONS:**

Cash Purchase
 Lease with purchase option 5, 7, 10 years
 Straight lease 5, 7, 10 years

MAINTENANCE / OTHER:

Warranty and maintenance are included the first year.
 Annual Service Contract Cost basis: dependent on number of switch cabinets and type of station equipment.
 On call service.
 Emergency service.
 Guaranteed Maintenance Price.
 Operator/Maintenance Training Course available.

OTHER COMMENTS:

Norelco activity in our area to date has been limited to a few proposals and no sales. They indicate they will become very active nationwide in the near future.

PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET**WHO THEY ARE:**

RCA Service Company
 Telephone Systems Unit
 Building 201-3
 Cherry Hill, New Jersey 08101

YEAR FORMED: 1966

**YEARS TELECOMMUNICATION
 EXPERIENCE:** 5

Selling, installing, maintaining paging and
 intercoms.

BRANCHES: Concord (P.O. Box 20), 192 Beacon St., So. San Francisco

BRIEF DESCRIPTION OF BUSINESS:

Sell, install, and maintain PBX systems in a limited number of industries using broadly based
 RCA Service offices to provide local maintenance.

WHAT THEY SELL:**PBX**

OKI AC120
 OKI AC220
 OKI AC250
 (no RCA equipment yet)
 OKI AC150

KTS

ITT
 Stromberg-Carlson

OTHER

Paging, Intercoms, TV's, etc.

**WHAT MOST PROPOSALS CONTAIN:
 FINANCE OPTIONS:**

Cash Purchase
 Lease 10 years (minimum)
 Lease/Purchase Option 7 - 10 years

MAINTENANCE / OTHER:

Maintenance included first 12 months.
 Annual Service Contract Cost Basis: Negoti-
 ated contract only.
 Guaranteed maintenance price for 1 year or,
 maintenance included in rate.

OTHER COMMENTS:

Started with retail department stores selling TV's, Paging and intercoms, focusing on motels/
 hotels, hospitals, and schools mainly because RCA Service installs and maintains TV or Paging
 systems in these industries.

Sales are by RCA Service Sales force primarily involved in selling TV service contracts.

PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET**WHO THEY ARE:**

Scott-Buttner-Communications
534 Twentieth Street
Oakland, California 94612

YEAR FORMED: 1970**BRANCHES:**

Sales: Fresno
Installation and Maintenance: Concord and Fresno

BRIEF DESCRIPTION OF BUSINESS:

Sell, install, and maintain PBX, KTS, Intercom and paging systems. Distributor for Plessey equipment in this area. Company is a subsidiary of Scott-Buttner Corp., an old line electrical contractor in business in Oakland since 1920. Parent company has an excellent reputation.

WHAT THEY SELL:

PBX	KTS	OTHER
Plessey PB 100	Nippon T2 line	Intercoms
Plessey PL 120 (OKI AC120)	Tie/Nitsuko 10-30	Paging
Plessey PL 220 (OKI AC220)	Tie 2040	Microwave
Plessey PL 250 (OKI AC150)	Stromberg-Carlson	
SBCC 805 (OKI AC150)	ITT	
Stromberg-Carlson Crossreed 400		
Stromberg-Carlson Crossreed 800		

**WHAT MOST PROPOSALS CONTAIN:
FINANCIAL OPTIONS**

Cash Purchase
Lease
Lease with Purchase Option
Economic Analysis (manually done)
— which adds 5% to our rate.
— eliminates interconnect after year 2.
— does not include personal property tax.

MAINTENANCE / OTHERS:

First 12 months warranty and maintenance included.
Offer per call maintenance and seldom recommend contract for same.
Maintenance on contract usually runs \$1.50 per station per month.
Seldom quote long term contracts.
Insurance usually not included in contract.

OTHER COMMENTS:

Scott-Buttner usually sells contracts to outside leasing or financing businesses so their capital is not tied up. Scott-Buttner has been known to adjust their price to make a sale.

PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET**WHO THEY ARE:**

Stromberg-Carlson Corporation
100 Carlson Road
Rochester, New York 14603

YEAR FORMED: 1896**BRANCHES:** Burlingame**DISTRIBUTORS:** Scott-Buttner Communications, Oakland, California.**BRIEF DESCRIPTION OF BUSINESS:**

Sell and install PBX central office, toll switching, subscriber and T-1 carrier toll transmission systems primarily to independent telephone companies and the Bell System.

Have a new type of PBX, the electronic Crossreed systems which have been offered to Bell and outside suppliers. Scott-Buttner sells the Crossreed systems in our area.

WHAT THEY SELL:**PBX**

XY 50
XY 80
Crossreed 400 (electronic)
Crossreed 800 (electronic)

KTS

Stromberg-Carlson

OTHER

T-1 Carrier

WHAT MOST PROPOSALS CONTAIN:

At this time, Stromberg is not selling direct but has set up Scott-Buttner as one of their dealers in our area.

PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET**WHO THEY ARE:**

United Business Communications, Inc.
 6405 Metcalf Avenue
 Shawnee Mission, Kansas 66202

YEAR FORMED: 1970 As an interconnect
 subsidiary

YEARS TELECOMMUNICATION

EXPERIENCE: 86

BRANCHES: Burlingame

SALES AGENTS: Northwest Utilities - Sacramento

BRIEF DESCRIPTION OF BUSINESS:

This wholly owned subsidiary of United Telecom distributes telephone equipment (particularly PBX systems) to industrial/commercial users. United Telecom is a major operating telephone utility and ranks as the nation's third largest.

WHAT THEY SELL:**PBX**

North Electric AKD 741
 North Electric ARD 561
 North Electric NX 1
 North Electric NX 2
 Fujitsu FXB 106U
 Fujitsu FXB 304U
 Fujitsu FXB 506U

KTS

Automatic Electric
 Stromberg-Carlson
 ITT

OTHER**WHAT MOST PROPOSALS CONTAIN:
 FINANCE OPTIONS**

Lease

Purchase

Lease with Purchase Option

A 5 % rate increase is generally added to our costs. Personal property taxes are usually not mentioned.

MAINTENANCE / OTHER:

Maintenance warranty included in first 12 months.

Contract available at approximately \$1.50 per month per station.

Per hour maintenance runs about \$22 per hour.

OTHER COMMENTS:

United Telecom owns North Electric, the manufacturer of the North-Electric version of the AKD741 and ARD561. United Leasing, another subsidiary, usually handles contract financing for UBC.

PACIFIC TELEPHONE NORTHERN REGION COMPETITOR FACT SHEET**WHO THEY ARE:**

Universal Communication Systems, Inc.
202 South Jefferson Street, P.O. Box 254
Roanoke, Virginia 24002

YEAR FORMED: 1969**BRANCHES:** Peninsula, Lake Tahoe area**BRIEF DESCRIPTION OF BUSINESS:**

Distribution, installation, and maintenance of PABX and Station equipment.

WHAT THEY SELL:**PBX**

Hitachi DAX-1
Hitachi AX-2S
Hitachi AX-3S
OKI AC120
OKI AC220
OKI AC250
OKI AC150

KTS

Stromberg-Carlson
Automatic Electric
ITT
Northern Electric

OTHER**WHAT MOST PROPOSALS CONTAIN:
FINANCING OPTIONS**

Lease
Purchase
Lease with Purchase Option

MAINTENANCE / OTHER:

Warranty and maintenance included during first 12 months.
Per hour maintenance is available.
Yearly contract is available on a year-by-year basis.

OTHER COMMENTS:

UCS has sold primarily to hotels and motels. They are owned by American Motor Inns, Inc., Virginia.

LOCAL COMPETITIVE VENDORS - PBX EQUIPMENT SOLD CHART

MANUFACTURER AND PLACE OF MANUFACTURE	PBX - PBX MODEL NUMBER	SIZE	VENDOR										
		TRUNK CAP. LINE CAP.	ARCATA	I.T.T.	LITCOM	R.C.A.	SCOTT- BUTNER	STROMBERG- CARLSON	U.B.C.	U.C.S.	P.T.&T.		
ERICSSON (SWEDEN)	AKD 741 ARD 561	14/50 40/270	X X										
FUJITSU (JAPAN)	FXB 108U FXB 304U	21/80 50/400							X X				
HITACHI (JAPAN)	DAX 1 AX2S AX3S	15/80 51/600 308/4800				X X X				X X X			
I.T.T. (SPAIN)	PENTOMAT 600T PENTOMAT P200T	36/200 400		X X									
(U.S.A.)	TE-400A TE-400P TE-400G TE-400H	96/400 83/800 72/800 63/800		X X X X									
(BELGIUM)	PENTOMAT 1000T	864/9000	X										
NIPPON (JAPAN)	NEPAX 100 NA4-09	20/100 62/400	X X		X X		X X			X X	X		
NORTH ELECTRIC (U.S.A.)	AKD 741 ARD 561	14/50 35/270							X X				
OKI (JAPAN)	AC-150 AC-120 AC-220 AC-250	15/60 20/90 64/400 60/600	X X X X		X X X X	X X X X							
PLESSEY (JAPAN)	PL810 (AC120) PL820 (AC220) PL850 (AC250) PL805 (AC150)	20/90 64/400 60/600 15/60				X X X X							
(CANADA)	PB100	20/100				X X							
STROMBERG-CARLSON (U.S.A.)	CROSSREED 400 CROSSREED 800	30/400 80/800					X X	X X					
WESTERN ELECTRIC (U.S.A.)	761B 758A 800A 701PK 770A NA4-09	8/40 20/60 20/80 —/200 52/400 44/400				(CSE Determines Tks.)					X X X X X X		

INTRODUCTION TO SWITCHING EQUIPMENT

CAPACITY

The capacity of the vehicle is shown in the chart below. System capacity is determined by the capacity of both the attendant position and the serving vehicle.

Capacity Chart

System	Lines	Central Office Trunks
805A	57	12
756A	60	10
800A	80	20
757A	200	43
801A	270	40
770A	400	100
101ESS	4,000	384
701B	No limit	No limit

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INTRODUCTION TO SWITCHING EQUIPMENT

The chart on the following pages will be useful for quick comparisons between serving vehicles. But when specific details of common features, station number assignment, access to FX and WATS, capacity, etc., are required, see the specific section of this manual for the particular serving vehicle.

Characteristics of Serving Vehicles

FEATURES	SWITCHING SYSTEM								
	701B	740E	756A	757A	770A	800A	801A	805A	101ESS
Attendant Conference	O	O	O	O	O	O	O		O
Attendant Restriction									
Direct Trunk Termination			C	C	C				
Switched Loop	C			C	C				
Attendant Trunks	S	S	S	S	S	S	S	S	S
Busy Lamp Field Only	O	O							
Busy Verification - Stations	O		O	O					
Call Transfer - Attendant	S	S	S	S	S	S	S	S	S
CCSA Access	O	O							O
Central Office Trunk Termination	S	S	S	S	S	S	S	S	S
Code Call	O	O	O	O		O	O		O
Code Restriction									O

KEY

S = Standard

O = Optional

C = Can be provided at no extra charge; consult PBX/Centrex Committee

INTRODUCTION TO SWITCHING EQUIPMENT

CHARACTERISTICS (Continued)

FEATURES	SWITCHING SYSTEM								
	701B	740E	756A	757A	770A	800A	801A	806A	101ESS
Conference Calling									
Attendant	O	O	O	O	O	O	O		O
Station			O	O		O	O		
Controlled Station Restriction	O			O					
Direct Outward Dialing	S	S	S	S	S	S	S	S	S
Direct Trunk Termination									
Switchboard	C	C	C	C		C			
Console	S		S	S	S	S	S	S	C
Fully Restricted Station	O			O	O				O
Incoming Call Identification	O			O					O
Lockout									
Incoming Exchange Network	C	C	C	C	C	C		C	C
CCSA Access Line	C	C		C					C
Manual Line Service									
Switchboard	O	O	O	O					
Message Waiting	O			O	O				
Miscellaneous Trunk Restrictions	C	C	C	C	C	C	C		C
Night Service	S	S	S	S	S	S	S	S	S
Paging - Loudspeaker	O	O	O	O		O	O		O
Paging - Radio	O	O	O	O		O	O		O
Power Failure Transfer	S	S	S	S	S	S	S	S	S
Recorded Telephone Dictation	O	O	O	O		O	O		O
Reserve Power	O	O	O	O		O	O	O	S
Restriction From Outgoing Calls	S	S	S	S	S	S	S	S	S

KEY

S = Standard

O = Optional

C = Can be provided at no extra charge; consult PBX/Centrex Committee

INTRODUCTION TO SWITCHING EQUIPMENT

CHARACTERISTICS (Continued)

FEATURES	SWITCHING SYSTEM								
	701B	740E	756A	757A	770A	800A	801A	805A	101ESS
Secrecy (with Lockout Only)									
Incoming Exchange Network	C	C	C	C	C				
CCSA Access Line	C	C		C					
Single Digit Dialing	O			O	O				
Station DSS	O		O	O					
Station Hunting	S	S	S	S	S	S	S	S	S
Station Message Registers	O			O	O				
Station-to-Station Calling	S	S	S	S	S	S	S	S	S
Supervisory Cabinet	C			O					C
Switched Loop									
Switchboard	C			C					S
Console	C			C					S
Tie Line Service	O	O	O	O	O	O	O	O	O
Toll Denial				O	O		O		
Toll Restriction									
Per System Basis	O(1)	O(1)	O(1)	O(1)	O(1)	O(1)	O(1)		O
Per Station Basis	O(2)	O(2)	O(1)	O(1)	O(1)	O(1)	O(1)		O
Toll Terminal	O			O	O				O
TOUCH TONE [®] Calling	O	O	O	O	O	O	O	O	S
Trouble Alarms	S	S	S	S	S	S	S	S	S
Two-way Splitting	C	C		C					C

NOTE

(1) Equipment required at central office

(2) Note (1) applies and segregated trunk groups are required

KEY

S = Standard

O = Optional

C = Can be provided at no extra charge; consult PBX/Centrex Committee



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INTRODUCTION TO SWITCHING EQUIPMENT COMPARISONS BETWEEN SERVING VEHICLES

SERVING VEHICLE	ACCESS CIRCUITS	ACCESS TO CODE CALL, RECORDED TELEPHONE DICTATION, AND PAGING	ACCESS TO FX WATS AND TIE LINES	ALTERNATE ANSWERING POSITION - CONSOLE
701	ACCESS PROVIDED BY STEP-BY-STEP SWITCHES NUMBER OF SWITCHES DETERMINED BY CUSTOMER NEEDS	ACCESS CODE IS 7-8 LEVEL, USE REDUCES STATION CAPACITY	ACCESS CODES 8-9	MAXIMUM OF 3 CONSOLES SIMULTANEOUS ANSWERING
740	ACCESS PROVIDED BY STEP-BY-STEP SWITCHES NUMBER OF SWITCHES DETERMINED BY CUSTOMER NEEDS	ANY ACCESS CODE HIGHER THAN ASSIGNED TO DIAL STATIONS USE REDUCES STATION CAPACITY	ACCESS CODES 7-8 IF A LEVEL IS "SPLIT," TWO DIGIT ACCESS CODES ARE REQUIRED FOR THAT LEVEL AND ALL LEVELS ABOVE	NOT AVAILABLE
766	UNIVERSAL LINE CIRCUITS 10 AVAILABLE; USED FOR CODE CALL, PAGING, RECORDED TELEPHONE DICTATION, DIAL TIE LINES ACCESS CODES 80-89 USE REDUCES CIRCUITS IN 20-29 STATION LINE GROUP	ACCESS CODES 80-89 USE REDUCES STATION CAPACITY ONE-FOR-ONE	FX AND WATS REQUIRES SPLITTING, ACCESS CODE 9 DIAL REPEATING ACCESS CODES	MAXIMUM 3 CONSOLES ANSWERING 6 BUTTON SET, COMBINATION OF 5 CO OR ATTENDANT TRUNKS ALTERNATE ANSWERING
767	UNIVERSAL TRUNKS 20 AVAILABLE; USED FOR CODE CALL, PAGING, RECORDED TELEPHONE DICTATION, TIE LINES, WATS, FX, C.O. TRUNKS USE REDUCES TRUNK CAPACITY ACCESS CODES 7-8 OR 70-89	ACCESS CODES 7-8 OR 70-89 USE REDUCES TOTAL TRUNK CAPACITY (SEE ACCESS CIRCUITS)	ACCESS CODES 7-8 OR 70-89	MAXIMUM OF 3 CONSOLES SIMULTANEOUS ANSWERING
770	LINKS 10 AVAILABLE FOR EACH GROUP OF 20 STATIONS USED FOR TIE LINES, FX, AND WATS ACCESS CODES 8-9	ACCESS CODES 8-9 USE REDUCES STATION CAPACITY	ACCESS CODES 8-9	MAXIMUM OF 2 CONSOLES SIMULTANEOUS ANSWERING
800	AUXILIARY TRUNKS 8 AVAILABLE ACCESS TO RECORDED TELEPHONE DICTATION, PAGING, TIE LINES USE REDUCES STATION CAPACITY ACCESS CODES 7-8 OR 70-89	ACCESS CODES 7-8 OR 70-89 USE REDUCES STATION CAPACITY	ACCESS CODES 7-8 OR 70-89	MAXIMUM OF 1 CONSOLE
801	AUXILIARY TRUNKS 16 AVAILABLE; USE REDUCES STATION CAPACITY ACCESS TO TIE LINE, FX, AND WATS TRUNKS, DIAL 70-89 TWO DIGIT - 80-89 OR 90-99	ACCESS CODES 70-89 ON 3 DIGIT OPERATION ACCESS CODES 80-89 OR 90-99 ON 2 DIGIT OPERATION USE REDUCES STATION CAPACITY	ACCESS CODES 70-89 ON 3 DIGIT OPERATION ACCESS CODES 80-89 OR 90-99 ON 2 DIGIT OPERATION	MAXIMUM OF 2 CONSOLES SIMULTANEOUS ANSWERING
805	12 AVAILABLE ACCESS TO CO, FX, WATS, TIE LINES USE REDUCES C.O. CAPACITY	NOT AVAILABLE	ACCESS CODES 8-9	MAXIMUM OF 1 CONSOLE



INTRODUCTION TO SWITCHING EQUIPMENT COMPARISONS BETWEEN SERVING VEHICLES

SERVING VEHICLE	ATTENDANT CAMP ON	ATTENDANT/INTERCEPT TRUNKS	CAPACITY	CONFERENCE CALLING STATION/ATTENDANT
701	SYSTEM CAPACITY ALL C.O. TRUNKS IN CAMP ON CONDITION	NUMBER PROVIDED BASED ON NEED	<p>LINES - 3 DIGIT 999 LINES REDUCED BY 100 LINES FOR EACH ACCESS LEVEL USED</p> <p>CAPACITY - 4 DIGIT, DEPENDS UPON MULTIPLE CAPACITY OF SWITCHBOARD</p> <p>CAPACITY - 4 DIGIT 711 SATELLITE: 10,000 LINES DETERMINED BY SWITCHING EQUIPMENT AND ATTENDANT POSITION</p> <p>TRUNKS DETERMINED BY ATTENDANT POSITION AND SWITCHER</p>	ATTENDANT REQUIRES 5 TERMINALS ON 7 OR 8 ACCESS CODE
740	NOT AVAILABLE	NUMBER PROVIDED BASED ON NEED	<p>LINES</p> <p>2-DIGIT --- 78 LINES</p> <p>3-DIGIT --- 298 LINES</p>	ATTENDANT REQUIRES 5 TERMINALS ON 7-8 ACCESS CODE
756	SYSTEM CAPACITY ONE C.O. TRUNK IN CAMP ON CONDITION	3 AVAILABLE; ALSO SERVE AS INTERCEPT	<p>LINES</p> <p>40 CONSOLE</p> <p>80 CONSOLE</p> <p>40-20 MANUAL/ SWITCHBOARD</p> <p>60-10 MANUAL/ SWITCHBOARD</p> <p>TRUNKS</p> <p>10/ CONSOLE</p> <p>20/ SWITCHBOARD</p>	ATTENDANT OR STATION REQUIRES 5 TERMINALS ON 80-89 ACCESS CODE
757	SYSTEM CAPACITY ONE C.O. TRUNK IN CAMP ON CONDITION	8 AVAILABLE; ALSO SERVE AS INTERCEPT	<p>LINES</p> <p>40</p> <p>80</p> <p>120</p> <p>160</p> <p>200</p> <p>TRUNKS</p> <p>43</p>	ATTENDANT OR STATION REQUIRES 5 TERMINALS ON 7-8 OR 70-89 ACCESS CODE
770	SYSTEM CAPACITY ALL C.O. TRUNKS IN CAMP ON CONDITION	16 AVAILABLE; ALSO SERVE AS INTERCEPT	<p>LINES</p> <p>40-400 LINES IN INCREMENTS OF 40</p> <p>TRUNKS</p> <p>100</p>	ATTENDANT REQUIRES 5 TERMINALS ON 7-8 OR 70-89 ACCESS CODE
800	SYSTEM CAPACITY 3 C.O. TRUNKS IN CAMP ON CONDITION	4 AVAILABLE; ALSO SERVE AS INTERCEPT	<p>LINES</p> <p>30</p> <p>44</p> <p>60</p> <p>80</p> <p>TRUNKS</p> <p>20</p>	ATTENDANT OR STATION REQUIRES 5 TERMINALS ON 80-89 ACCESS CODE
801	SYSTEM CAPACITY 6 C.O. TRUNKS IN CAMP ON CONDITION	8 AVAILABLE; ALSO SERVE AS INTERCEPT	<p>LINES</p> <p>60</p> <p>120</p> <p>180</p> <p>270</p> <p>TRUNKS</p> <p>40</p>	ATTENDANT OR STATION REQUIRES 5 TERMINALS ON 70-78 OR 80-89 OR 90-98 ACCESS CODES
808	NOT AVAILABLE	2 AVAILABLE; ALSO SERVE AS INTERCEPT	<p>LINES</p> <p>19</p> <p>87</p> <p>TRUNKS</p> <p>12</p>	NOT AVAILABLE



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INTRODUCTION TO SWITCHING EQUIPMENT COMPARISONS BETWEEN SERVING VEHICLES

SERVING VEHICLE	LINKS/ INTERCOM TRUNKS	NIGHT SERVICE ARRANGEMENTS	POWER FAILURE TRANSFER
701	PROVIDED BY STEP-BY-STEP SWITCHES NUMBER OF SWITCHES DETERMINED BY CUSTOMER NEEDS	FLEXIBLE FIXED NIGHT CONNECTION USING CONSOLE ANY TRUNK TO ANY STATION USING CORDS LIMITED BY NUMBER OF CORDS AVAILABLE	IF BATTERY POWERED, SYSTEM AUTOMATICALLY PROVIDES EMERGENCY POWER FOR APPROXIMATELY 8 HOURS AFTER POWER FAILURE
740	PROVIDED BY STEP-BY-STEP SWITCHES NUMBER OF SWITCHES DETERMINED BY CUSTOMER NEEDS	FLEXIBLE LIMITED BY NUMBER OF CORDS AVAILABLE	IF BATTERY POWERED, SYSTEM AUTOMATICALLY PROVIDES EMERGENCY POWER FOR APPROXIMATELY 8 HOURS AFTER POWER FAILURE
758	16 LINKS AVAILABLE: TYPE OF CALL TRUNK-TO-STATION STATION-TO-STATION STATION-TO-REPRESENTATIVE TIE-LINE STATION-TO-DIAL CODE CALL STATION-TO-DIAL CONFERENCE LINK REQUIRED 1 2 2 4 2-10	FLEXIBLE ALTERNATE 8-BUTTON ANSWERING STATION FIXED FOR FIRST 2 TRUNKS TO STATIONS 30-32	STATIONS 30-31, AND 32 AUTOMATICALLY CONNECTED TO FIRST 3 CENTRAL OFFICE TRUNKS-DIAL TONE START KEY REQUIRED NO SWITCHING OR INTERCOM INCOMING AND OUTGOING CO FROM 3 STATIONS WITH CONSOLE-ONLY INCOMING WITH SWITCHBOARD
757	80 LINKS AVAILABLE: TYPE OF CALL STATION-TO-STATION STATION-TO-TRUNK STATION-TO-TIE-LINE LINK REQUIRED 2+1 1 1 JUNCTOR	FLEXIBLE	8 STATIONS AUTOMATICALLY CONNECTED TO 8 CO TRUNKS-DIAL TONE START KEYS REQUIRED NO SWITCHING OR INTERCOM INCOMING AND OUTGOING SERVICE ON 6 TRUNKS FROM 6 STATIONS
770	10 LINES AVAILABLE FOR EVERY 20 STATION LINES TYPE OF CALL STATION-TO-STATION STATION-TO-TRUNK STATION-TO-TIE-LINE TRUNK-TO-STATION TIE-LINE-TO-STATION LINK REQUIRED 2 1 1 1 1	FLEXIBLE ANY TRUNK TO ANY STATION	4 STATIONS PER GROUP OF 40 STATIONS AUTOMATICALLY CONNECT TO 4 CO TRUNKS-DIAL TONE START KEY REQUIRED NO SWITCHING OF INTERCOM INCOMING AND OUTGOING SERVICE ON 4 TRUNKS FROM 4 STATION ON EACH GROUP
800	96 LINKS AVAILABLE: TYPE OF CALL STATION-TO-STATION STATION-TO-ATTENDANT STATION-TO-CO STATION-TO-CONFERENCE LINK REQUIRED 2+1 INTERCOM TRUNK 1 1 1 1 10 INTERCOM TRUNKS AVAILABLE: ONE USED TO COMPLETE EACH STATION-TO-STATION CALL	FLEXIBLE 4 STATIONS AUTOMATICALLY CONNECTED TO FIRST 4 TRUNKS-DIAL TONE START KEYS REQUIRED FLEXIBLE	4 STATIONS AUTOMATICALLY CONNECT TO 4 TRUNKS-WITH DIAL TONE START KEY REQUIRED NO SWITCHING OR INTERCOM INCOMING AND OUTGOING SERVICE ON 4 TRUNKS FROM 4 STATIONS SELECTED AUTOMATICALLY CONNECT TO CO TRUNKS
801	128 LINKS AVAILABLE: ONE CALL MAY USE AS MANY AS 8 LINKS 20 INTERCOM TRUNKS AVAILABLE: ONE USED TO COMPLETE EACH STATION-TO-STATION CALL		NO INTERCOM OR SWITCHING INCOMING AND OUTGOING SERVICE ON TRUNKS FROM SELECTED STATIONS DIAL TONE START KEYS REQUIRED
806	FOUR AVAILABLE THREE PROVIDED WHEN 11 OR 12 TRUNKS ARE USED ONE USED TO COMPLETE EACH STATION-TO-STATION CALL	FIXED MAXIMUM 4 STATION LINES	AUTOMATIC CONNECTION OF FIRST 4 TRUNKS TO 4 PREDETERMINED STATIONS WITH DIAL TONE START KEY NO SWITCHING OF INTERCOM OUTGOING SERVICE ON 4 TRUNKS FROM 4 STATIONS 4 STATIONS AUTOMATICALLY CONNECTED TO FIRST 4 TRUNKS-DIAL TONE START KEYS REQUIRED



INTRODUCTION TO SWITCHING EQUIPMENT COMPARISONS BETWEEN SERVING VEHICLES

SERVING VEHICLE	RESERVE POWER	RESTRICTION FROM OUTGOING CALLS	SERIES OFFERINGS	SPACE REQUIREMENTS
701	IF BATTERY POWERED, SYSTEM AUTOMATICALLY PROVIDES EMERGENCY POWER FOR APPROXIMATELY 8 HOURS AFTER POWER FAILURE.	SELECTED STATIONS MAY BE RESTRICTED FROM ANY LEVEL IF ONE STATION IS RESTRICTED FROM MORE THAN ONE LEVEL, THEN EACH STATION RESTRICTED IN THE SAME LINE GROUP WILL HAVE THE SAME RESTRICTION.	HARDWARE, SERIES 100, 200, AND 300	FRAMES AND RELAY RACKS HOUSED IN CUSTOMER-PROVIDED ROOM
740	IF BATTERY POWERED, SYSTEM AUTOMATICALLY PROVIDES EMERGENCY POWER FOR APPROXIMATELY 8 HOURS AFTER POWER FAILURE.	SELECTED STATIONS MAY BE RESTRICTED FROM ANY LEVELS IF ONE STATION IS RESTRICTED FROM MORE THAN ONE LEVEL, ALL RESTRICTED STATIONS WILL HAVE THE SAME RESTRICTION.	HARDWARE.	FRAMES AND RELAY RACKS HOUSED IN CUSTOMER-PROVIDED ROOM
756	(OPTIONAL SERVICE OFFERING.)	SELECTED STATIONS RESTRICTED ACCESS TO CENTRAL OFFICE OR TIE LINES	HARDWARE, SERIES 100, 200, AND 300	SELF-CONTAINED MODULAR CABINET UP TO 2 CABINETS
757	(OPTIONAL SERVICE OFFERING.)	STATIONS OR TRUNKS ASSIGNED TO CLASS-OF-SERVICE CATEGORIES 8 CLASS-OF-SERVICE CATEGORIES AVAILABLE	HARDWARE, SERIES 100, 200, AND 300	SELF-CONTAINED MODULAR CABINET UP TO 12 CABINETS
770	(OPTIONAL SERVICE OFFERING.)	STATION LINES ASSIGNED TO CLASS-OF-SERVICE CATEGORIES UP TO 16 CLASSES OF SERVICE AVAILABLE	SERIES 100, 200, AND 300	SELF-CONTAINED MODULAR CABINETS UP TO 4 CABINETS
800	(OPTIONAL SERVICE OFFERING.)	STATIONS ASSIGNED TO CLASS-OF-SERVICE CATEGORIES UP TO 3 CLASSES-OF-SERVICE AVAILABLE	SERIES 100, 200, AND 300	SELF-CONTAINED MODULAR CABINET UP TO 3 CABINETS
801	(NOT AVAILABLE)	STATIONS OR TRUNKS ASSIGNED TO CLASS-OF-SERVICE CATEGORIES 8 CLASS-OF-SERVICE CATEGORIES AVAILABLE FOR STATIONS 19 CLASSES-OF-SERVICE AVAILABLE FOR TRUNKS	SERIES 100, 200, AND 300	SELF-CONTAINED MODULAR CABINET UP TO 4 CABINETS
806	(OPTIONAL SERVICE OFFERING.)	TWO CLASSES-OF-SERVICE RESTRICTED STATION FROM DIAL "9" CODE UNRESTRICTED STATIONS STATION ASSIGNED TO CLASS-OF-SERVICE CATEGORIES 2 CLASSES-OF-SERVICE AVAILABLE	SERIES 100	SELF-CONTAINED MODULAR CABINET SYSTEM FULLY EXPANDABLE WITHIN SINGLE CABINET

PBX-PABX EQUIPMENT AND FEATURE COMPARISONS

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BELL ADVANTAGES:

- (1) 800A is electronic — theirs is X-bar (30 years). Ours is modern, faster connecting, less troublesome, easier to repair.
- (2) We offer greater trunk capacity — (look for future growth requirements).
- (3) 800A has greater in-out-intercom call carrying capacity.
- (4) Can have 2 consoles (with DSS) on 756 (non-simultaneous). Establish the need for 2nd position with full system control (DSS, operator trunks, station busy lamps, etc.).
- (5) We have 3-4 "O" circuits, they have one. Stress need for operator access for message taking, call transfer, out calls for restricted stations, checking for messages, attendant conference, etc. (1 circuit is not enough).
- (6) The 800A has 3 simultaneous add-on circuits (which are also used for consultation hold and transfer). They have only two. Circuits remain up for duration of call on add-on and consultation hold and become free for re-use after call transferred.
- (7) We can conference 4 stations and 1 trunk. They 3 and 1.
- (8) We and they have DSS but they use 25 buttons to access 50 stations. To do it an interim button is pushed to access 26-50. Failure to push it connects the attendant and party to a wrong station (1-25). Also, their busy lamps do not remain continually lighted. Ours do and provide continuous status.
- (9) 10 trunks on 756 and 3 on 800A can be camped on. We do not know how many they can camp on at 1 time. Help us find out.
- (10) We have more consultation hold circuits. (Same used for add-on and transfer.)
- (11) The AKD 741 does *NOT* have indication of camp-on. We do. Sell the benefits.
- (12) Our station in trouble isolates itself from the equipment. Theirs does not and can affect total system performance until found and fixed.
- (13) The 756 can have station DSS. Sell its benefits to busy executives since we understand the AKD 741 does not have this feature.
- (14) Our station hunting is standard and plentiful. They offer very little. Identify the need for station hunting in departments, boss/secretary, etc.
- (15) Non-consecutive hunting offered by all but they are limited by quantity.
- (16) 800A has greater capacity for call transfer, our 3 to their 2. (Same circuits are used for add-on and station transfer.)

NON-BELL ADVANTAGES:

- (20) Their attendant can enter a busy conversation to verify if busy. We could offer this same feature by eliminating privacy. Merits are questionable.
- (21) Trunks and camped-on calls revert back to the attendant after 30-45 seconds. Not a bad feature but do *ALL* attendant held trunks and camped-on calls, and calls not answered revert back? Does a camped-on stay camped-on? (No) Does an unanswered call continue to ring at the station? (Yes) What does the waiting party hear? (ringing) Does the operator know which call is coming back? And how does the call return to the console — over attendant trunks? (This we do not know for sure.)
- (22) How many trunks can be sequenced? Why doesn't the station transfer the call?
- (23) This feature is the same as No. (20).
- (24) Only stations ending in "0" are provided with this feature. Providing it eliminates privacy and
- (25) Only two may be transferred simultaneously (same circuits used for add-on and dial station transfer). (Optional with us on 800A.)
- (26) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

Mfr & Model	ERICSSON AKD 741	W E. 756A	W E. 800A		
Origin	SWEDEN	USA	USA		
Control	ELECTRO MECH	RELAY	ELECTRONIC ⁽¹¹⁾		
Switching	CODE SWITCH MATRIX	X BAR	FERREED MATRIX & SOLID STATE		
CAPACITY					
Lines Max	50	60	80		
Trunks Max	14	10 - 20 * (2)	20		
Links Max	6	16	10		
# Internal Calls	6	6	10		
# Total Calls	20	13	30 * (3)		
# Consoles	1	2 * (4)	1		
# Simultaneous Consoles	—	1	1		
Sw Network - CCS	—	—	5.9		
Grade of Service	.02	.02	.02		
# Attendant Circuits	1	3 * (5)	4 * (5)		
FEATURES					
# Add On Conferences	0-2	—	0-3 * (6)		
Attendant Conference	0	0 * (7)	0 * (7)		
Attendant Busy Verification	S * (20)	—	—		
Attendant OSS/w Busy Lamps	S	0 * (8)	0 * (8)		
Auto Recall Attendant (Reversion)	S * (21)	—	—		
Attendant Seq Call (Senal Call)	S * (22)	—	—		
# Auto Callback - Station	—	—	—		
Busy Override - Attendant/w Tone	S * (23)	—	—		
Busy Override - Exten/w Tone	S * (24)	—	—		
Call Forward-Busy Line	—	—	—		
Call Forward-Don't Answer	—	—	—		
Call Restriction - Out Calls	S	S	S		
# Camp On - Attendant	S #INA	0-10 * (9)	0-3 * (9)		
# Consultation Hold	2	—	3 * (10)		
Dictation Access	0	0	0		
Indication of Camp On	—	0 * (11)	0 * (11)		
Line Lockout	—	S * (12)	S * (12)		
Message Registers	0	0	0		
Message Waiting	0	0	0		
Paging Access	0	0	0		
# Power Failure Transfer	S #INA	S-4 lines	S-4 lines		
Speed Calling	—	—	—		
Station OSS	—	—	—		
# Sta Hunt Connc. # Groups Max	0-2 grps of 5 or 1 of 10	S in 10's grp * (13)	S unlimited * (14)		
# Sta Hunt Non Connc. # Groups Max	—	S in 10's grp * (15)	S unlimited * (15)		
Station Transfer - In Calls	S - 2	—	0 - 3		
Station Transfer - Out Calls	S - 2 * (25)	—	0 - 3		
# Total Simultaneous Transfers	2	—	3 * (16)		
Step Call	—	—	—		
Tie Lines	0	0	0		
Toll Denial (1 & 0)	S * (26)	—	0		
Toll Diverting	0	0	0		
TOUCH TONE Equivalent	0	0	0		
Trouble Alarm	INA	S	S		
# Trunk Answer Any Station	S #INA	0-1	0-unlimited		

BELL ADVANTAGES:

- (0) 800A is electronic vs their X-bar (30 years). Ours is faster, more modern, etc.
- (1) The 770 and NA4-09 have greater capacity (trunks, stations, internal calls).
- (2) All Western Electric systems have ample operator trunks. The ARD 561 comes standard with only one per console. More can be added, but take up trunk buttons. Stress need for more in/out message checking, assistance, etc. Note: Additional "0" trunks are one way only. Dial tone cannot be passed over them.
- (3) Our 770 allows up to 24 add-on simultaneous conferences. Theirs up to 6 depending on size. Circuits are held for duration of conference. Same circuits are used for consultation hold and dial
- (4) We extend calls at the touch of a button. They must key-pulse the complete number in. (Greater chance for errors.) Our DSS with Touch Tone[®] offers the customer a choice.
- (5) The 770 has up to 24 circuits for use during consultation hold compared to 3-6 on the ARD 561. Stress the benefits of greater capacity.
- (6) Our station hunting is standard and plentiful, theirs is extremely limited. Look for need and sell benefits.
- (7) Call transfer. Again more capacity on the 770. Same circuits are used for add-on conference and consultation hold. (What good are futuristic features if there isn't sufficient capacity to use them effectively?)

NON-BELL ADVANTAGES:

- (10) The attendant can interrupt a conversation to see if the line is really busy. Will the customer do without privacy?
- (11) Trunks and camped-on calls revert back to the operator after 30-45 seconds as do calls that have not been answered. A camped-on call when reverted back does not stay camped-on and must have the connection re-established. Is there enough capacity in the system to cause *ALL* calls to be reverted back? Can the operator handle calls bouncing all over the place as they probably would be on a large system?
- (12) How many trunk calls can be placed on sequencing? Is there enough capacity to do the job? Won't station transfer eliminate the need for this? Why tie up the operator?
- (13) Only one or two call-back circuits per machine. Operation: dialing "3" camps a station onto another station. When the called station hangs up the calling station is rung and connected to the called station. The calling station can make or receive other calls. What will using the code "3" do to capacity of the system? Will 2 circuits be enough? (Was only one figured into the pricing?)
- (14) Is busy override a good feature? Is the customer willing to sacrifice privacy? Will interruption create ill will?
- (15) Only stations ending in "0" are provided this option. Eliminating privacy can cause ill will and lost business. Not a good feature.
- (16) An advantage because it is a standard feature with them. How many calls may be camped on? All trunks?
- (17) Only 3-6 may be transferred simultaneously. The same circuits are used for consultation hold, call transfer, and add-on conference. (What good is a feature if there is not sufficient capacity to use it?) (How many are included in the contract?) Optional with us except on 756.
- (18) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

Mfr & Model	ERICSSON ARD 561	W.E. 756A	W.E. 800A	W.E. 770A-11	TELCO NA4 09
Origin	SWEDEN	USA	USA	USA	JAPAN
Control	ELECTRO MECH.	RELAY	ELECTRONIC*(10)	RELAY	RELAY COMMON
Switching	CODE SWITCH MATRIX X-BAR	X-BAR	FERRET-D MATRIX & SOLID STATE	X-BAR	X-BAR
CAPACITY					
Lines Max	60 60 120 150 180 270	60	80	40 80 160 320 400	400 600
Trunks Max	5 10 15 20 30 40	10 - 20	20	110	52
Links Max	5 10 15 15 15 20	16	10	determined by C.S.E.	32
# Internal Calls	5 10 15 15 15 20	5	10	142	70
# Total Calls	10 20 30 35 45 60	13	30	142	70
# Consoles	1 1 1 2 2 3	2	1	2 2 3 3 3	3
# Simultaneous Consoles	1 1 1 2 2 3	1	1	2 2 3 3 3	3
Sw Network - CCS	5.76		5.9	determined by C.S.E.	5.4
Grade of Service	02	02	02	02	03
# Attendant Circuits	1 PER CONSOLE	3	* (2) 4	+ (2) 10 10 18 18 18	* (2) 6
FEATURES					
# Add-On Conferences	0 3 to 6	—	0-3	0-24	* (3) 0-6
Attendant Conference	0	0	0	0	0
Attendant Busy Verification	S	+ (10)	—	+ (4)	—
Attendant OSS/w Busy Lamp	—	0	0	—	0
Auto Recall Attendant (Reversion)	S	+ (11)	—	—	+ (4) 0
Attendant Seq Call (Serial Call)	S	+ (12)	—	—	—
# Auto Callback - Station	0-2	+ (13)	—	—	—
Busy Override - Attendant/w Tone	S	+ (14)	—	—	—
Busy Override - Exec/w Tone	S	+ (15)	—	—	—
Call Forward-Busy Line	—	—	—	—	—
Call Forward-Don't Answer	—	—	—	—	—
Call Restriction - Out Calls	S	S	5	5	5
# Camp On - Attendant	S #INA	0-10	0-3	0-unlimited	0-unlimited
# Consultation Hold	S 3 to 6	—	3	24	+ (5) 8
Dictation Access	0	0	0	0	0
Indication of Camp-On	S	+ (16)	0	0	0
Line Lockout	INA	S	S	—	S
Message Registers	0	0	0	0	0
Message Waiting	0	0	0	0	0
Paging Access	0	0	0	0	0
# Power Failure Transfer	INA	S-4 lines	S-4 lines	4 8 16 32 40	S
Speed Calling	—	—	—	—	—
Station OSS	—	0	—	—	—
# Sta Hunt Consec # Groups Max	0-4 grps of 5 or 2 of 10	S-in 10's grp	* (6) S-unlimited	* (6) S-in 10's grp	* (6) S-unlimited
# Sta Hunt Non Consec # Groups Max	— #INA	S-in 10's grp	S-unlimited	S-in 10's grp	S-unlimited
Station Transfer - In Calls	S	—	0	0	0
Station Transfer - Out Calls	S	+ (17)	0	0	—
# Total Simultaneous Transfers	3 to 6	—	3	24	+ (7) 6
Stop Call	—	—	—	—	S
Tie Lines	0	0	0	0	0
Toll Denial (1 & 0)	0	+ (18) 0	0	0	0
Toll Overring	0	0	0	0	0
TOUCH-TONE Equivalent	0	0	0	0	0
Trouble Alarms	S	S	S	S	S
# Trunk Answer Any Station	S #INA	1	0-unlimited	0-max of 24	0-unlimited

S Standard 0 Optional - Not Offered INA Info. Not Available * Advantage () Refer to Notes

FUJITSU FXB 106-U (SOLD BY UBC) VS BELL

A3-5a

BELL ADVANTAGES:

- (1) Electronic System — Newer and better than X-Bar (either theirs or ours) because it is more compact, faster operating.
- (2) The number of simultaneous internal calls varies from 1 more on the 756 to 5 more on the 800A. This is a 100% increase in potential capacity.
- (3) The number of Total Simultaneous Calls is higher than our 756 but in the 800A our advantage is 4 additional (13% greater).
- (4) When comparing the 756, pay special attention to the possible requirements for 2 (non-simultaneous) consoles. Only the 756 will do this.
- (5) Both the 756 and 800A have far more attendant trunks than the FXB 106-U — limited operator access can seriously hamper the station user, especially if there is a large number of restricted stations.
- (6) Attendant conference — self-explanatory. We offer it — the 106-U does not — determine requirements for this feature and *sell* the benefits.
- (7) The 106-U does not offer DSS. The attendant must "dial" the desired station. She has visual indication of the station being busy, but only if optional equipment is provided. The busy lamp field does not stay lighted.
- (8) If the optional charge camp-on feature is provided, there is no "tone" given to the busy station. *He doesn't know a call is waiting.* All Bell System camp-on equipment provides this tone.
- (9) No line lock out is offered on the 106U. This means that if a station line goes bad, it could tie up major components in the switcher, thus restricting the total operation of the machine.
- (10) Self explanatory — when the lights go out, so does the entire telephone system, but not with Bell equipment.
- (11) Only the 756 offers station DSS for executive single pushbutton access to dial stations. Sell the benefits.
- (12-13) Hunting on our equipment is no problem. With the 106U the customer is limited to two groups of five station lines or 3 groups of 3 station lines. They *cannot* hunt to non-consecutive lines. Sell our strength.
- (14) The 106-U offers trunk answer any station and the number of simultaneous answers depends on the system capacity. Our 756 is limited in this area, but the 800A can answer as many calls as there are trunks.

NON-BELL ADVANTAGES:

- (20) The 106-U has an advantage capacity-wise over the 756, but is very close to the 800A in the number of simultaneous add-on's. KTS type add-on provides us with "unlimited" capacity.
- (21) Their attendant can enter a busy conversation to verify if busy. We could offer this same feature by eliminating privacy. Merits are questionable.
- (22) Same situation as (21) above.
- (23) This feature eliminates privacy and can cause rudeness, lost business, and low morale.
- (24) Same as (20) above.
- (25-26) In/Out Call Transfer is an advantage but we can do also utilizing a special assembly, placing calls through the attendant, etc., on 756. The 800A offers in/out call transfer.
- (27) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

Model	FUJITSU FXB 106U					W.E. 756					W.E. 800A				
Origin	JAPAN					USA					USA				
Control	RELAY					RELAY					ELECTRONIC (1)				
Switching	X-BAR					X-BAR					FELT/EC/MATRIX & SOLID STATE				
CAPACITY															
Lines Max	40	60	80			60					80				
Trunks Max	12	21	21			10 - 20			(2)		20				
Lines Min	4	5	5			16					10				
# Internal Calls	4	5	5			8			(2)		10			(2)	
# Total Calls	16	26	26			13					30			(3)	
# Consoles	1	1	1			2			(4)		1				
# Simultaneous Consoles	1	1	1			1					1				
Sw Network - CCS	INA														
Grade of Service	INA					.02					-				
# Attendant Circuits	1					3			(5)		4			(5)	
FEATURES															
# Add-On Conferences	S-2, 3, 4					+ (20)					0-3				
Attendant Conference	-					0			(6)		0			(6)	
Attendant Busy Verification	S					+ (21)					-				
Attendant OSS/w Busy Lamps	-					0			(7)		0			(7)	
Auto Recall Attendant (Reversion)	-					-					-				
Attendant Seq Call (Serial Call)	-					-					-				
# Auto Callback - Station	-					-					-				
Busy Override - Attendant/w Tone	S					+ (22)					-				
Busy Override - Extch/ Tone	0					+ (23)					-				
Call Forward-Busy Line	-					-					-				
Call Forward-Don't Answer	-					-					-				
Call Restriction - Out Calls	S					S					S				
# Camp On - Attendant	0 # INA					0-10					0-3				
# Consultation Hold	S-2, 3, 4					+ (24)					3				
Dictation Access	0					0					0				
Indication of Camp-On	0					0			(8)		0			(8)	
Line Lockout	INA					S			(9)		S			(9)	
Message Registers	0					0					0				
Message Waiting	0					0					0				
Paging Access	0					0					0				
# Power Failure Transfer	INA					S-4 lines			(10)		S-4 lines			(10)	
Speed Calling	-					-					-				
Station OSS	-					0			(11)		-				
# Sta Hunt Consec. # Groups Max	0-2 grps of 5 or 3 of 3					S in 10's grp			(12)		S unlimited			(12)	
# Sta Hunt Non Consec. # Groups Max	-					S in 10's grp			(13)		S unlimited			(13)	
Station Transfer - In Calls	S					+ (25)					0 - 3				
Station Transfer - Out Calls	S					+ (26)					0 - 3				
# Total Simultaneous Transfers	2	3	4			-					3				
Step Call	-					-					-				
Tie Lines	0					0					0				
Toll Denial (1 & 0)	S					+ (27)					0				
Toll Diverting	0					0					0				
TOUCH-TONE Equivalent	-					0					0				
Trouble Alarms	INA					S					S				
# Trunk Answer Any Station	S-1 to 6					0-1					Unlimited			(14)	

BELL ADVANTAGES:

- (1) Trunk and total call carrying capacity about equal with our NA 4-09, but the 770 surpasses the 304-U on all counts.
- (2) The access to the attendant is greater with the NA 4-09 and very much greater with the 770. Look for areas that require operator assistance: attendant conference, toll call control, attendant station transfer, and restricted stations. These operations require attendant trunks.
- (3) Add-on conference: In a system up to 300 lines, our simultaneous capacity is greater on both the 409 and the 770. At 400 lines, the 304-U has the same capacity as the 409, but misses the 770 by 300%. Establish the need for greater capacity and sell the benefits. Remember, our KTS add-on provides "unlimited" capacity.
- (4) The Bell equipment can establish a camp-on for each incoming trunk. We are not sure how many simultaneous camp-ons can be established on the 304-U. (ask)
- (5) Consultation Hold is offered on all switches but at maximum the 304-U only meets the 4-09 and doesn't come close to the 770.
- (6) No known provision for power failure operation on the 304-U unless reserve batteries are provided. An obvious Bell advantage.
- (7) Hunting, both consecutive and non-consecutive is limited on the 304-U to specific groups or combinations of groups. But, we can hunt any number within a 10's group. Look for present and future needs.
- (8) See (3) and (5) above. The same equipment is used for these features so the same logic applies. Will a maximum of 6 be enough?
- (9) When outgoing transfer is added to the FXB 304 U-I the total trunk capacity of the system is reduced to:

	100 Lines	200-700 Lines
Combination Trunks	8	14
Incoming Trunks	8*	16*
DCO Trunks	Not usable	Not usable

*IF THE CUSTOMER'S INITIAL OR FUTURE REQUIREMENTS EXCEED THE ABOVE, OUTWARD TRANSFER CANNOT BE PROVIDED (UNLESS SPECIAL TRUNK FRAMES ARE ADDED AT EXTRA COST.)

- (10) The 304-U offers trunk answer any station but is limited to 6 at any one time. Our equipment ranges from 24 to 1 for each trunk installed (unlimited). Sell the obvious benefits.

NON-BELL ADVANTAGES:

- (17) Attendant busy verification could be a useful feature but remember, there is no way to exclude the operator from any call. Sell the privacy angle. Also, our busy lamp field provides continual status at all times.
- (18) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

Mfg. & Model	FUJITSU FXB 304U						W. E. 770A II						TELCO NA4-09					
Origin	JAPAN						U.S.A.						JAPAN					
Control	RELAY - COMMON						RELAY						RELAY COMMON					
Switching	X-BAR						X-BAR						X-BAR					
CAPACITY																		
Lines Max	100	150	200	300	400	700	40	80	160	320	400	400/600			H/M			
Trunks Max	21	25	35	50	50	50	DETERMINED BY C.S.E.					110	52	* (11)				
Links Max	6	6	12	12	15	15						18	18					
# Internal Calls	6	12	12	12	15	15						32	18					
# Total Calls	27	37	47	62	65	65						142	70	* (11)				
# Consoles	2	2	2	3	3	3	2	2	3	3	3	3	3					
# Simultaneous Consoles	INA											2	2	3	3	3		
Sw Network - CCS	5.8					4.0	3.0	determined by C.S.E.					5.4	5.4				
Grade of Service	.02					.02	.02						.02	.02				
# Attendant Circuits	2	2	2	2	2	2	10	10	18	18	18	(2)	8					
FEATURES																		
# Add On Conferences	0-3	3	3	3	6		0-24						* (3)	0-6				
Attendant Conference	0						0						0					
Attendant Busy Verification	S						S						S					
Attendant OSS/w Busy Lamps	-						0						* (14)	0				
Auto Recall Attendant (Reversion)	0						-						0					
Attendant Seq Call (Serial Call)	-						-						-					
# Auto Callback - Station	-						-						-					
Busy Override - Attendant/w Tone	S						* (17)						-					
Busy Override - Exec/w Tone	-						-						-					
Call Forward-Busy Line	-						-						-					
Call Forward-Don't Answer	-						-						-					
Call Restriction - Out Calls	S						S						S					
# Camp On - Attendant	0						unlimited						* (4)	unlimited	* (4)			
# Consultation Hold	0-3	3	3	3	6	6	24						* (5)	6				
Dictation Access	0						0						0					
Indication of Camp-On	0						0						0					
Line Lockout	0						-						S					
Message Registers	0						0						0					
Message Waiting	0						0						0					
Paging Access	0						0						0					
# Power Failure Transfer	-						4	8	16	32	40	(6)	S	* (6)				
Speed Calling	-						-						-					
Station DSS	-						-						-					
# Sta Hunt Consec. # Groups Max	4	Gps. of 4				8	Gps. of 4	S - in 10's grp			* (7)	S-unlimited	* (7)					
# Sta Hunt Non-Consec. # Groups Max	-						-	S - in 10's grp					-					
Station Transfer - In Calls	0						0						0					
Station Transfer - Out Calls	0						0						* (9)	0	* (9)			
# Total Simultaneous Transfers	3	3	3	6	6	6	24						* (8)	6	* (8)			
Step Call	S						-						S					
Tie Lines	0						0						0					
Toll Denial (1 & 0)	S						* (18)	0						0				
Toll Diverting	0						0						0					
TOUCH-TONE Equivalent	0						0						0					
Trouble Alarms	INA						S						S					
# Trunk Answer Any Station	S-3	3	3	3	6	6	0	Maximum 24			* (10)	unlimited	* (10)					

BELL ADVANTAGES:

- (1) Electronic — better than X-bar (theirs or ours). Faster, quieter, more modern.
- (2) Greater C.O. Trunk capacity — growth consideration.
- (3) Consoles on 756 — can have two (non-simultaneous). Stress if need for alternate answering is found. Also, both have DSS capability.
- (4) Greater ability to reach attendant for transfer, message taking, help for restricted stations, etc.
- (5) Add-on — not offered on DAX-1.
- (6) No conferencing through attendant on the DAX-1.
- (7) No DSS offered — uses "Key Pulse"
- (8) Camp-on (*without indication*) is offered but the number of calls that can be simultaneously camped-on is not known — ours is 10 on the 756, 3 on the 800A.
- (9-10) Features only offered by Bell — both could be quite important to a customer.
- (11) In the DAX-1 system — the line lockout feature is activated only if the station handset is removed from the set — if you don't know the line is in trouble, and don't lift the handset your set continues to tie up the system.
- (12) We have power failure transfer. They do not. They must install optional reserve power at extra cost.
- (13-14) Hunting limited to 6 groups. The number of lines per group is not known (this is an option).

NON-BELL ADVANTAGES:

- (21) Functions like attendant override. Attendant can tell if conversation is in progress — but *eliminates privacy*.
- (22-23) Available but eliminates privacy. Would you like your call interrupted?
- (24) Speed calling is a good feature only if it will be used a good deal of the time by one or more key station users — if not, why pay for it. (We have card dialers and magicalls.)
- (25) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

A3-9b
HITACHI DAX-1

Mfg. & Model	HITACHI DAX-1				W. E. 756A				W. E. 800A			
Origin	JAPAN				U.S.A.				U.S.A.			
Control	ELECTRO MECH				RELAY				ELECTRONIC * (1)			
Switching	X BAR				X BAR				FERREED MATRIX & SOLID STATE			
CAPACITY												
Lines Max	20	40	60	80	60				80			
Trunks Max	5	9	12	15	10 - 20			* (2)	20			* (2)
Links Max	2	4	5	6	16				10			
# Internal Calls	2	4	5	6	6				10			
# Total Calls	7	13	17	21	13				30			
# Consoles	1	1	1	1	2			* (3)	1			* (3)
# Simultaneous Consoles	1	1	1	1	1				1			
Sw Network - CCS	5.7								5.9			
Grade of Service	.02				.02				.02			
# Attendant Circuits	1.2				3			* (4)	4			* (4)
FEATURES												
# Add On Conferences	0 # INA				-				0.3			* (5)
Attendant Conference	-				0			* (6)	0			* (6)
Attendant Busy Verification	S			* (21)	-				-			
Attendant OSS/w Busy Lamps	-				0			* (7)	0			* (7)
Auto Recall Attendant (Reversion)	-				-				-			
Attendant Seq Call (Senat Call)	-				-				-			
# Auto Callback - Station	-				-				-			
Busy Override - Attendant/w Tone	0			* (22)	-				-			
Busy Override - Exec/w Tone	0			* (23)	-				-			
Call Forward Busy Line	-				-				-			
Call Forward Don't Answer	-				-				-			
Call Restriction - Out Calls	S				S				S			
# Camp On - Attendant	0 # INA				10			* (8)	3			* (8)
# Consultation Hold	0 # INA				-				3			
Dictation Access	-				0			* (9)	0			* (9)
Indication of Camp-On	-				0			* (10)	0			* (10)
Line Lockout	0				S			* (11)	S			* (11)
Message Registers	0				0				0			
Message Waiting	0				0				0			
Paging Access	0				0				0			
# Power Failure Transfer	-				S 4 sta lines			* (12)	S 4 sta lines			* (12)
Speed Calling	0			* (24)	-				-			
Station OSS	-				0				-			
# Sta Hunt Consec. # Groups Max	0.6 groups				S in 10's groups			* (13)	UNLIMITED			* (13)
# Sta Hunt Non Consec. # Groups Max	0.6 groups				S in 10's groups			* (14)	UNLIMITED			* (14)
Station Transfer - In Calls	0				-				0			
Station Transfer - Out Calls	-				-				0			
# Total Simultaneous Transfers	INA				-				3			
Step Call	-				-				-			
Tie Lines	0				0				0			
Toll Denial (1 & 0)	0			* (25)	0				0			
Toll Diverting	0				0				0			
TOUCH TONE Equivalent	0				0				0			
Trouble Alarms	S				S				S			
# Trunk Answer Any Station	0, INA				1				0-UNLIMITED			

6-73

S Standard O Optional - Not Offered INA Info, Not Available * Advantage () Refer to Notes

BELL ADVANTAGES:

- (0) The 770 offers far more trunk and internal call capacity than any other premises vehicle now in service (except for the 701). Look for need and sell the benefits.
- (1) We have ability to provide far more attendant trunks. Identify need for operator access for message taking, call transfers, out calls for restricted stations, message checking, attendant conferences, etc.
- (2) As far as is known, the AX2-S does not offer attendant conference capability.
- (3) No DSS on the AX2-S — Operator must "key pulse". Stress our benefits.
- (4) On both the 770 and NA-409 the attendant camp-on is limited only by the number of Trunks. The number of simultaneous camp-ons possible with the AX2-S is not known but most foreign PABX's do not offer complete simultaneous camp-on — ask the interconnect salesman how many! (And what does the contract say?)
- (5) We can offer from 6 to 24 simultaneous consultation hold operations (depending on the vehicle). We don't know how many the AX2-S offers. Look for need and stress our strength.
- (6) This feature is automatic with Bell equipment. On the AX2-S you must remove the handset to release a station line that is malfunctioning (this is okay if *you know* the line is out).
- (7) Power failure transfer is dependent on reserve battery power on the AX2-S. It's standard with Bell.
- (8-9) With AX2-S hunting is an option, and it consists of three lines per hunting group with a maximum 16 groups possible (3 per group) (or 8 six line groups can be provided by combining two three line hunting groups together.) We have greater capacity. (What does their contract specify?)
- (10) Number of simultaneous transfers on the AX2-S is not known but our vehicles range from 6 to 24. The AX2-S does *NOT* have out call transfer — we do! Stress the benefits.
- (11) Our trunk answer any station capability is from 24 to one for every trunk. The AX2-S capability is unknown. (What good is a feature if there is not sufficient capacity to do the job?)

NON-BELL ADVANTAGES:

- (17) Attendant busy override — eliminates any privacy from the attendant.
- (18) Executive override — eliminates privacy plus the inadvisability of an executive overriding a busy station and sending a tone into the middle of his salesman's sales close.
- (19) Call forwarding busy line — our hunting capability can accomplish practically the same thing.
- (20) Good feature if the customer has a *need*. If not why pay for it! If he really wants it, sell him a Magically with greater capacity.
- (21) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

A3-11b
HITACHI AX2-S

Mfr & Model	HITACHI AX2-S					WE 770A II					TELCO NA4-09						
Origin:	JAPAN					USA					JAPAN						
Control:	ELECTRO/MECH.					RELAY					RELAY COMMON						
Switching:	X-BAR					X-BAR					X-BAR						
CAPACITY																	
Lines Max	100	200	300	400	600	40	80	160	320	400	400	H.M.	600	•	(1)		
Trunks Max	18	27	34	47	51	determined by C.S.E.					110	52	•	(1)			
Links Max	9	14	18	24	28	+ (0)					32	18					
# Internal Calls	9	14	18	24	28						142	70	•	(1)			
# Total Calls	27	41	52	71	79	2					2	3	3	3			
# Consoles	2	2	2	2	4	2					2	3	3	3			
# Simultaneous Consoles	INA						2					2	3	3			
Sw Network - CCS	5.0						DETERMINED BY C.S.E.					5.4					
Grade of Service	.02						02						02				
# Attendant Circuits	2						10					10	18	18	(1)		
FEATURES																	
# Add-On Conferences	0	# INA						0-24					0-6				
Attendant Conference	-					0				•	(2)	0		•	(2)		
Attendant Busy Verification	0					-						S					
Attendant DSS/w Busy Lamp	-					0				•	(3)	0					
Auto Recall Attendant (Reversign)	0					-						0					
Attendant Seq Call (Senal Call)	-					-						-					
# Auto Callback - Station	-					-						-					
Busy Override - Attendant/w Tone	S				•	(17)	-					-					
Busy Override - Exec/w Tone	0				•	(18)	-					-					
Call Forward-Busy Line	0				•	(19)	-					-					
Call Forward-Don't Answer	-					-						-					
Call Restriction - Out Calls	S					S						S					
# Camp-On - Attendant	0	# INA						0 unlimited					•	(4)	0 unlimited	•	(4)
# Consultation Hold	0	# INA						24					•	(5)	6		
Dictation Access	0					0						0					
Indication of Camp-On	0					0						0					
Line Lockout	0					0						S		•	(6)		
Message Registers	0					0						0					
Message Waiting	0					0						0					
Paging Access	0					0						0					
# Power Failure Transfer	0	# INA						0 8 16 32 40					•	(7)	S	•	(7)
Speed Calling	0				•	(20)	-					-					
Station DSS	-					-						-					
# Sta Hunt-Consec # Groups Max	0	16 grp of 3 or 8 of 6						S in 10's grp					•	(8)	S unlimited	•	(8)
# Sta Hunt Non Consec # Groups Max	-					0						S in 10's grp	•	(9)	-	•	(9)
Station Transfer - In Calls	0					0						0					
Station Transfer - Out Calls	-					0						0		•	(10)	0	
# Total Simultaneous Transfers	INA					24					•	(10)	6				
Step Call	S					-						S					
Tie Lines	0					0						0					
Toll Denial (1 & 0)	S				•	(21)	0					0					
Toll Diverting	0					0						0					
TOUCH TONE Equivalent	0					0						0					
Trouble Alarms	S					S						S					
# Trunk Answer Any Station	0	# INA						0-max of 24					•	(11)	0 unlimited	•	(11)

4-73

S Standard 0 Optional - Not Offered INA Info, Not Available * Advantage () Refer to Notes

A3-13
LITCOM AC120
(Also Called CB240)

Mfg & Model	LITCOM AC 120
Origin	JAPAN
Control	ELECTRO-MECH.
Switching	X BAR
CAPACITY	SEE OKI AC 120
Lines-Max	
Trunks-Max	
Links-Max	
# Internal Calls	
# Total Calls	
# Consoles	
# Simultaneous Consoles	
Sig Network - CCS	
Chk of Service	
# Attendant Circuits	
FEATURES	
# Add-On Conferences	
Attendant Conference	
Attendant Busy Verification	
Attendant DSS/w Busy Lamp	
Auto Recall Attendant (Reversion)	
Attendant Seq Call (Serial Call)	
# Auto Callback - Station	
Busy Override - Attendant/w Tone	
Busy Override - Exec/w Tone	
Call Forward-Busy Link	
Call Forward-Dn'l Answer	
Call Restriction - Out Calls	
# Camp On - Attendant	
# Consultation Hold	
Dictation Access	
Indication of Camp-On	
Line Lockout	
Message Registers	
Message Waiting	
Paging Access	
# Power Failure Transfer	
Speed Calling	
Station DSS	
# Sta Hunt-Consec # Groups Max	
# Sta Hunt-Non-Consec # Groups Max	
Station Transfer - In Calls	
Station Transfer - Out Calls	
# Total Simultaneous Transfers	
Step Call	
Tie Lines	
Toll Denal (1 & 0)	
Toll Diverting	
TOUCH TONE Equivalent	
Trouble Alarms	
# Trunk Answer Any Station	

4-73

S Standard O Optional — Not Offered INA Info. Not Available * Advantage () Refer to Notes

NIPPON NEPAX 100-DB (SOLD BY ARCATA, GCE, LITCOM, SCOTT-BUTTNER,
UCS) VS BELL

A3-19a

BELL ADVANTAGES:

- (0) 800A is electronic — theirs is x-bar (30 years old). Ours is faster, quieter, more modern.
- (1) Total number of calls greater on 3 of our machines.
- (2) DSS/Busy field offered on 3 of our machines and optional on the 409.
- (3) We have many more attendant trunks than the Nepax. Our smallest has a 200% better chance for a station user to reach the operator. Look for need to call the operator (messages, transfers, etc.).
- (4) Two or more consoles offered on the 756-770-NA-409. (The 2 on 756 are non-simultaneous.)
- (5) The best information available says the 100-DB cannot handle operator conference call situations. This could be a big plus for our gear.
- (6) We can provide dictation access on every PBX system. Apparently not offered on the NEPAX 100-DB.
- (7) There is some doubt that camp-on is offered on the 100-DB. Not so with our equipment.
- (8) The indication of camp-on can be provided with the Bell camp-on feature (on 756) and is provided on the others.
- (9-10) No provision for the 100-DB to work with a small hotel/motel requiring message waiting and registers.
- (11) See (6) above.
- (12) Power failure transfer is a must on dial PBX's and the NEPAX doesn't offer it as a standard feature. Only as an extra cost option with reserve battery power.
- (13) Station hunting is also an option on the NEPAX. We don't know what the limitations are but feel their capability does not match ours.
- (14) Same logic as (13) above.

NON-BELL ADVANTAGES:

- (17) The 100-DB offers attendant override but remember there is no assured *privacy* on any call if this feature is in the system.
- (18) Step call is used to supplement their limited hunting but only if the desired second station is in the same 10's group. If not, it can't be used. (Our hunting capabilities are an obvious advantage.)
- (19) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

A3-19b
NIPPON NEPAX-100DB

Mfr & Model	NIPPON NEPAX 100-DB	W.E. 756A	W.E. 800A	W.E. 770A.11	TELCO NA4-09
Origin	JAPAN	USA	USA	USA	JAPAN
Control	ELECTRO MECH.	RELAY	ELECTRONIC* (10)	RELAY	RELAY COMMON
Switching	X-BAR	X-BAR	FERREED MATRIX & SOLID STATE	X-BAR	X-BAR
CAPACITY					
Lines Max	100	60	80	40 80 160 320 400	400 600
Trunks Max	20	10 - 20	20	110	52
Links Max	6	16	10	* (1) determined by C.S.E.	18
# Internal Calls	6	6	10	32	18
# Total Calls	26	13	30	142	70
# Consoles	1	2	* (4) 1	2 2 3 3 3 (4) 3	* (4) 18
# Simultaneous Consoles	1	1	1	determined by C.S.E.	5.4
Sw Network - CCS	5.4		5.9	02	02
Grade of Service	02	02	* (3) 4	10 10 18 18 18 18	* (3) 8
# Attendant Circuits	1	3			
FEATURES					
# Add On Conferences	0 #INA	—	0-3	0-24	0-6
Attendant Conferences	—	0	* (5) 0	* (5) 0	* (5) 0
Attendant Busy Verification	—	—	—	—	S
Attendant OSS/w Busy Lamps	—	0	* (2) 0	* (2) 0	0
Auto Recall Attendant (Reversion)	—	—	—	—	0
Attendant Seq Call (Senal Call)	—	—	—	—	—
# Auto Callback - Station	—	—	—	—	—
Busy Override - Attendant/w Tone	S	* (17) —	—	—	—
Busy Override - Exch/w Tone	—	—	—	—	—
Call Forward-Busy Line	—	—	—	—	—
Call Forward-Don't Answer	—	—	—	—	—
Call Restriction - Out Calls	8	S	S	S	S
# Camp On - Attendant	0 #INA	0-10	* (7) 0-3	Unlimited	* (7) unlimited
# Consultation Hold	0 #INA	—	3	24	6
Indication Access	—	0	* (6) 0	* (6) 0	* (6) 0
Indication of Camp-On	—	0	* (8) 0	* (8) 0	* (8) 0
Line Lockout	—	S	S	—	S
Message Registers	—	0	* (9) 0	* (9) 0	* (9) 0
Message Waiting	—	0	* (10) 0	* (10) 0	* (10) 0
Paging Access	—	0	* (11) 0	* (11) 0	* (11) 0
# Power Failure Transfer	0	S-4 lines	* (12) S-4 lines	* (12) 4 8 16 32 40 112	* (12) S
Speed Calling	—	—	—	—	—
Station OSS	—	0	—	—	—
# Sta Hunt Consec. # Groups Max	0 #INA	S in 10's grp	* (13) S-unlimited	* (13) S in 10's grp	* (13) S-unlimited
# Sta Hunt Non-Consec. # Groups Max	0 #INA	S in 10's grp	S-unlimited	S in 10's grp	0
Station Transfer - In Calls	—	—	0	—	—
Station Transfer - Out Calls	—	—	—	—	—
# Total Simultaneous Transfers	INA	—	24	24	8
Step Call	S	* (18) —	—	—	S
Tie Lines	0	0	0	0	0
Toll Denial (1 & 0)	S	* (19) 0	—	0	0
Toll Overring	0	0	0	0	0
TOUCH-TONE Equivalent	0	0	0	0	0
Trouble Alarms	INA	S	S	S	S
# Trunk Answer Any Station	0 #INA	0-1	* (14) Unlimited	* (14) 0 max of 24	* (14) unlimited

NIPPON NA4-09 (SOLD BY ARCATA, LITCOM, SCOTT-BUTTNER, UCS)
VS BELL

A3-21a

BELL ADVANTAGES & FEATURE COMPARISONS:

- (1) The 770 has greater capacity than either the Bell or non-Bell Nippon NA4-09.
- (2) The 770 offers more attendant trunks than the non-Bell Nippon. Look for need to access the attendant for messages (in or out), transfer of calls, dialing for restricted stations, and paging now and in the future.
- (3) The 770 has greater station add-on, consultation hold and transfer capacity. The standard non-bell Nippon has up to 6 circuits for 400 lines whereas our 770 can offer up to 24. These circuits are used for add-on, consultation hold and transfer (on transfer the circuit frees up after call transferred). Look for need to add-on, consultation hold, and transfer calls now and in the future. After all, what good is a feature if there is not sufficient capacity to use it?
- (4) The 770 offers DSS — our version of the 4-09 does not normally, however, we can provide it if absolutely necessary.
- (5) All in trunks can be camped-on to stations on our Nippon and the 770. The non-Bell Nippon may have the same capacity but what does the contract say?
- (6) Station hunting is offered as standard on their series 100-200-300 packages, but is *optional* in the basic package. It is usually equipped with 10 numbers per 100 lines, while ours has much more. In addition, the 770 can hunt non-consecutively.

NON-BELL ADVANTAGES:

- (15) Speed calling — the non-Bell NA4-09 offers abbreviated dialing. We can offer one number dialers, magicals, and card dialers.
- (16) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

NOTE: The Bell and non-Bell NA4-09's are basically the same except for minor modifications we make to them. (a) For example, the tone of the bell at the console is changed, (b) we'll put in what the customer needs in the way of attendant trunks, hunting arrangements, etc., that may not be included in the price of the non-Bell proposal.

A3-21b
NIPPON NA4-09 (Non-Bell)

Mfg. & Model	NIPPON NA4-09					W.E. 770A II					TELCO NA4-09				
Origin	JAPAN					U.S.A.					JAPAN				
Control	RELAY					RELAY					RELAY-COMMON				
Switching	X-BAR					X-BAR					X-BAR				
CAPACITY															
Lines-Max	100	200	300	400	600	40	80	160	320	400	400	600			
Trunks-Max	24	44	44	52	54	DETERMINED BY C.S.E.					110	52			
Links-Max	10	14	18	18							(1)	18			
# Internal Calls	10	14	18	18	22						32	18			
# Total Calls	34	58	62	70							142	70			
# Consoles	1	2	2	3	3	2	2	3	3	3	3				
# Simultaneous Consoles	INA					2	2	3	3	3					
Sw Network - CCS	5.4					DETERMINED BY C.S.E.					5.4				
Grade of Service	02					02					02				
# Attendant Circuits	2	3	3	6	6	10	10	18	18	18(2)	6				
FEATURES															
# Add On Conferences	02	3	3	6	6	0-24					(3)	0-6			
Attendant Conference	0					0						0			
Attendant Busy Verification	S					-						S			
Attendant OSS/w Busy Lamps	0					0					(4)	0			
Auto Recall Attendant (Reversion)	0					-						0			
Attendant Seq Call (Serial Call)	-					-						-			
# Auto Callback - Station	-					-						-			
Busy Override - Attendant/w Tone	-					-						-			
Busy Override - Exec/w Tone	-					-						-			
Call Forward-Busy Link	-					-						-			
Call Forward-Don't Answer	-					-						-			
Call Restriction - Out Calls	S					S						S			
# Camp On - Attendant	unlimited (7)					unlimited					(5)	unlimited		(5)	
# Consultation Hold	02	3	3	6	6	24					(3)	6			
Dictation Access	0					0						0			
Indication of Camp-On	S					0						0			
Line Lockout	S					S						S			
Message Registers	0					0						0			
Message Waiting	0					0						0			
Paging Access	0					0						0			
# Power Failure Transfer	S					4	16	32	40			S			
Speed Calling	11					(15)						-			
Station OSS	-					-						-			
# Sta Hunt Consec. # Groups-Max	0 - unlimited					S - in 10's grp					(6)	S UNLIMITED			
# Sta Hunt Non Consec. # Groups-Max	0 - in 10's grp					S - in 10's grp						0			
Station Transfer - In Calls	0					0						0			
Station Transfer - Out Calls	0					0						0			
# Total Simultaneous Transfers	2	3	3	6	6	24					(3)	6			
Step Call	S					-						S			
Tie Lines	0					0						0			
Toll Denial (1 & 0)	S					(16)						0			
Toll Diverting	0					0						0			
TOUCH TONE Equivalent	0					0						0			
Trouble Alarms	S					S						S			
# Trunk Answer Any Station	unlimited					0 Maximum 24						unlimited			

S Standard O Optional - Not Offered INA Info, Not Available * Advantage () Refer to Notes

BELL ADVANTAGES:

- (1) 800A is electronic — theirs is X-bar (30 years). Ours is modern, faster connecting, less troublesome, easier to repair.
- (2) We offer greater trunk capacity — look for existing need and future growth.
- (3) 800A has greater in-out-intercom call carrying capacity.
- (4) Can have two consoles (with DSS) on 756 (non-simultaneous). Look for need for second position with full system control (DSS, operator trunks, etc.)
- (5) We have 3-4 "0" circuits, they have one. Look for need for operator access for message taking, call transfer, out calls for restricted stations, checking for messages, attendant conference, paging, etc. (one circuit may not be enough).
- (6) The 800A has three simultaneous add-on circuits (which are also used for consultation hold and transfer). They have only two.
- (7) We can conference 4 stations and one trunk. They 3 and 1.
- (8) We and they have DSS, but they use 25 buttons to access 50 stations. To do it an interim button is pushed to access 26-50. Failure to push it connects the attendant and party to a wrong station (1-25). (Our busy lamps show status at all times. Theirs does not.)
- (9) 10 trunks on 756 and 3 on 800A can be simultaneously camped on. We do not know how many they can camp-on at one time. Help us find out.
- (10) We have more consultation hold circuits. (Same used for add-on and transfer.)
- (11) The AKD 741 does *NOT* have indication of camp-on. We do. Sell the benefits.
- (12) Our station in trouble isolates itself from the equipment. Theirs does not and can affect total system performance until found and fixed.
- (13) The 756 can have station DSS. Sell its benefits to busy executives since we understand theirs does not have this feature.
- (14) Our station hunting is standard and plentiful. They offer very little. Identify the need for station hunting in departments, between secretary and boss, etc.
- (15) Non-consecutive hunting offered by all but *they* are limited by quantity.
- (16) 800A has 50% greater capacity for call transfer, our 3 to their 2. (Same circuits are used for add-on and station transfer.)

NON-BELL ADVANTAGES:

- (20) Their attendant can enter a busy conversation to see if busy. We could offer this same feature by eliminating privacy. Merits are questionable.
- (21) How many trunks can be sequenced? Why can't stations transfer the call? Good only if attendant remembers to push the sequence button.
- (22) Only stations ending in "0" are provided with this feature. Providing it eliminates privacy and can cause rudeness, lost business, and low morale. How would you like someone to interrupt your call?
- (23) Only two may be transferred simultaneously (same circuits used for add-on and dial station transfer). Provided also on our 800A and with greater capacity.
- (24) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

A3-23b
NORTH ELECTRIC AKD 741

Mfr. & Model	NORTH ELEC AKD 741	W. E. 756A	W. E. 800A		
Origin	U.S.A.	U.S.A.	U.S.A.		
Control	RELAY	RELAY	ELECTRONIC * (1)		
Switching	X-BAR	X-BAR	FERRIS MATRIX & SOLID STATE		
CAPACITY					
Lines Max	50	60	80		
Trunks Max	10	10 - 20	* (2) 20	* (2)	
Links Max	6	16	10		
# Internal Calls	6	6	10		
# Total Calls	16	13	30	* (3)	
# Consoles	1	2	* (4) 1		
# Simultaneous Consoles	—	1	1		
Sw Network - CCS	5.4		5.9		
Grade of Service	.02	.02	.02		
# Attendant Circuits	1	3	* (5) 4	* (5)	
FEATURES					
# Add-On Conferences	0-2	—	0-3	* (6)	
Attendant Conference	—	0	* (7) 0	* (7)	
Attendant Busy Verification	S	* (20) —	—		
Attendant OSS/w Busy Lungs	S	0	* (8) 0	* (8)	
Auto Recall Attendant (Reversion)	—	—	—		
Attendant Seq Call (Serial Call)	S	* (21) —	—		
# Auto Callback - Station	—	—	—		
Busy Override - Attendant/w Tone	S - no tone?	—	—		
Busy Override - Excl/w Tone	S	* (22) —	—		
Call Forward-Busy Line	—	—	—		
Call Forward-Don't Answer	—	—	—		
Call Restriction - Out Calls	S	S	S		
# Camp On - Attendant	S #INA	0 - 10	* (9) 3	* (9)	
# Consultation Hold	S-2	—	3	* (10)	
Dictation Access	B	0	0		
Indication of Camp-On	—	0	* (11) 0	* (11)	
Line Lockout	—	S	* (12) S	* (12)	
Message Registers	0	0	0		
Message Waiting	0	0	0		
Paging Access	0	0	0		
# Power Failure Transfer	S	S 4 sta. lines	S 4 sta. lines		
Speed Calling	—	—	—		
Station OSS	—	0	* (13) —		
# Sta Hunt Consec. # Groups Max	0-2 grps of 5	S in 10's groups	* (14) UNLIMITED	* (14)	
# Sta Hunt Non-Consec. # Groups Max	0	S in 10's groups	* (15) UNLIMITED	* (15)	
Station Transfer - In Calls	S	—	0		
Station Transfer - Out Calls	S	* (23) —	0		
# Total Simultaneous Transfers	2	—	0	* (16)	
Step Call	—	—	—		
Tie Lines	0	0	0		
Toll Denial (1 & 0)	0	* (24) 0	0		
Toll Overring	0	0	0		
TOUCH TONE Equivalent	0	0	0		
Trouble Alarms	INA	S	S		
# Trunk Answer Any Station	S #INA	1	0-UNLIMITED		

4-73

S Standard 0 Optional — Not Offered INA Info, Not Available * Advantage () Refer to Notes

NORTH ELECTRIC ARD 561 (SOLD BY UBC) VS BELL

A3-25a

BELL ADVANTAGES:

- (0) 800A is electronic — theirs is X-bar type. Ours is faster, quieter, more modern.
- (1) The 770 and NA4-09 have greater capacity (trunks, stations, internal calls).
- (2) All Bell systems have ample operator trunks. The ARD 561 comes standard with only one per console. More can probably be added, but take up trunk buttons. Identify need for more in/out message checking, paging through attendant, assistance, etc. Note: Additional "0" trunks are one way only. Dial tone cannot be passed over them.
- (3) Our 770 allows 24 add-on simultaneous conferences. Theirs 3-6 depending on size. Circuits are held for duration of conference. Same circuits are used for consultation hold and dial station transfer.
- (4) We transfer calls at the touch of a button. They must "key-pulse" the complete number in. (Greater chance for errors.) Also, their busy lamp field only goes to 180.
- (5) Unlimited calls can be camped on with the 770 and NA4-09. How many will their system allow? Will it be enough? Sell our strength.
- (6) The 770 has 24 circuits for use during consultation hold compared to the 3-6 on the ARD 561. Sell the benefits of greater capacity.
- (7) With our system emergency in or out calling is assured. Is it with their system? Is their entire system off the air in a power failure? We consider communication important during power failure. Sell the benefits. (Note: Theirs is off the air unless reserve battery power is supplied.)
- (8-9) Our station hunting is standard and plentiful, theirs is extremely limited. Look for need and sell benefits and you will provide better service now and in the future than the ARD 561.
- (10) Call transfer. Again more capacity on the 770. (Same circuits are used for add-on conference and consultation hold.) (What good are futuristic features if there isn't sufficient capacity to use them effectively?)
- (11) We offer 24 to unlimited simultaneous answering of calls. How many can be answered at one time on their system? Enough? Our systems provide more today as well as tomorrow.

NON-BELL ADVANTAGES:

- (15) The attendant can interrupt a conversation to see if the line is really busy. Will the customer do without privacy?
- (16) Trunks and camped-on calls revert back to the operator after 30 seconds as do calls that have not been answered. A camped-on call when reverted back does not stay camped-on and must have the connection reestablished. Is there enough capacity in the system to cause ALL calls to be reverted back? Can the operator handle calls bouncing all over the place as they probably would be on a large system? Is there a chance poorer service could result?
- (17) How many trunk calls can be placed on sequencing? Is there enough capacity to do the job? Won't station transfer eliminate the need for this? Why tie up the operator?
- (18) Only one or two call-back circuits per machine. (Operation: dialing "3" camps a station onto another station. When the called station hangs up, the calling station is rung and connected to the called station. The calling station can make or receive other calls. What will using the code (3) do to capacity of the system? Will 2 circuits be enough? (Was only one figured into the pricing? What does the contract say?)
- (19) Is busy override a good feature? Is the customer willing to sacrifice privacy? Will interruption create ill will? Only stations ending in "0" are provided this option. Is that enough today? Tomorrow?
- (20) Eliminating privacy can cause ill will and lost business. A good feature? Is the "warning" tone the same as camp-on? If so, how will this affect the called station? (Is someone eavesdropping or is it a camped-on call?)
- (21) Only 3-6 may be transferred simultaneously. The same circuits are used for consultation hold, in call transfer, and add-on conference. (What good is a feature if there is not sufficient capacity to use it?)
- (22) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

A3-25b
NORTH ELECTRIC ARD 561

Mfg. & Model	NORTH ELEC. ARD 561				W.E. 800A				W.E. 770A-11				TELCO NA4 09			
Origin:	U.S.A.				USA				USA				JAPAN			
Control:	RELAY				ELECTRONIC* (10)				RELAY				RELAY COMMON			
Switching:	X-BAR				FERREDO MATRIX & SOLID STATE				X-BAR				X-BAR			
CAPACITY																
Lines Max	60	90	180	270	80				40	80	160	320	400	400	600	* (11)
Trunks Max	15	15	35	35	20								110	52		* (11)
Links Max	10	10	15	20	10				* (11) determined by C.S.E.					18		
# Internal Calls	10	10	15	20	10								32	18		
# Total Calls	25	25	50	55	30								142	70		* (11)
# Consoles	1	2	2	3	1				2	2	3	3	3			
# Simultaneous Consoles	1	2	2	3	1				2	2	3	3	3			
Sw Network - CCS	5.8				5.9				determined by C.S.E.					5.4		
Grade of Service	02				02				02							
# Attendant Circuits	1	2	2	3	4			* (12)	10	10	18	18	18	12	8	* (12)
FEATURES																
# Add On Conferences	0 - 3 to 6				0-3				0-24				* (3)	0-6		
Attendant Conference	0				0				0					0		
Attendant Busy Verification	S			* (15)	-				-					S		
Attendant OSS/w Busy Lamps	-				0			* (4)	0				* (4)	0		
Auto Recall Attendant (Reversion)	S				* (16)	-			-					0		
Attendant Seq Call (Senal Call)	S				* (17)	-			-					-		
# Auto Callback - Station	0 # INA				* (18)	-			-					-		
Busy Override - Attendant/w Tone	S			* (19)	-				-					-		
Busy Override - Exch/w Tone	S			* (20)	-				-					-		
Call Forward-Busy Line	-				-				-					-		
Call Forward-Don't Answer	-				-				-					-		
Call Restriction - Out Calls	S				S				S					S		
# Camp On - Attendant	S # INA				0-3				0 unlimited				* (5)	0 unlimited		* (5)
# Consultation Hold	0 - 3 to 6				3				24				* (6)	6		
Detention Access	0				0				0					0		
Indication of Camp-On	S				0				0					0		
Line Lockout	INA				S				-					S		
Message Registers	0				0				0					0		
Message Waiting	0				0				0					0		
Paging Access	0				0				0					0		
# Power Failure Transfer	INA				S-4 lines			* (7)	4	8	16	32	40	17	S	* (7)
Speed Calling	-				-				-					-		
Station OSS	-				-				-					-		
# Sta Hunt Consec. # Groups Max	0 (4 gps 5) (2 gps 10)				S unlimited			* (8)	S in 10's grp				* (8)	S unlimited		* (8)
# Sta Hunt Non Consec. # Groups Max	-				S unlimited			* (9)	S in 10's grp				* (9)	-		
Station Transfer - In Calls	S				0				0					0		
Station Transfer - Out Calls	S			* (21)	0				0					0		
# Total Simultaneous Transfers	3-6				3				24				* (10)	6		(10)
Step Call	-				-				-					S		
Tie Lines	0				0				0					0		
Toll Denial (1 & 0)	S			* (22)	0				0					0		
Toll Diverting	0				0				0					0		
TOUCH TONE Equivalent	0				0				0					0		
Trouble Alarms	INA				S				S					S		
# Trunk Answer Any Station	S # INA				0 unlimited			* (11)	0 max of 24				* (11)	0 unlimited		* (11)

S Standard 0 Optional - Not Offered INA Info, Not Available * Advantage () Refer to Notes

OKI AC120 (SOLD BY ARCATA, LITCOM, RCA, SCOTT-BUTTNER)
VS BELL

A3-27a

BELL ADVANTAGES:

- (1) 800A is electronic — theirs is X-bar (30 years). Ours is modern, faster connecting, less troublesome, easier to repair.
- (2) 800A, 770, and NA4-09 have greater internal call and total call carrying capacity. 770 has greater trunk capacity. Look for heavy internal and trunk calling.
- (3) 770 and NA4-09 will operate with 3 simultaneous consoles, if required. Theirs only 2 and NOT SIMULTANEOUSLY. Look for need for 2nd position with total system control, i.e., DSS, busy lamps, attendant trunks, etc.
- (4) We have 100% to 800% more "O" trunks than theirs. Identify need for operator access for message checking, checking out for an appointment, attendant conferences, transfer of calls, help to a restricted station, attendant paging.
- (5) Our 770 offers 24 simultaneous add-on conferences. Their capacity is 2. (Are 2 in the contract?) Will their machine offer sufficient capacity to satisfy current and future needs? (Same circuits are used for consultation hold and station transfer.)
- (6) We transfer calls at the touch of a button. They must Key-pulse in the complete number. Key pulse may provide greater chance for error. (Our console with Touch Tone® offers both.)
- (7) We are strong in this area. (The 770 and NA4-09 offer camp-on of every trunk.) Their capacity is not known. What good is camp-on if sufficient capacity is not available?
- (8) The 770 has 24 circuits, the 800A three, and the NA4-09 six, for use during consultation hold. Their capacity is two. Is it sufficient to meet customer present and future needs?
(NOTE: Same circuits are used for add-on and station transfer.)
- (9) We have indication of camp-on. They do NOT. Sell the benefits of good customer service, time and money saving, total system effectiveness, etc.
- (10) When the power fails so does the entire system. No one gets in or out or in between. With our system emergency in and out calls are assured. Not so with theirs unless reserve battery power is installed. (\$\$)
- (11) The 756 can have station DSS. Sell busy executives the benefits.
- (12) Our station hunting is standard and plentiful. Theirs is not. Sell the benefits.
- (13) We can station hunt to non-consecutive numbers. They can not. Sell the benefits.
- (14) More capacity on 800A, 770 and NA4-09. They have up to 2. Same circuits are used for add-on conference and consultation hold. (How many are in their contract?)
- (15) Trouble alarms tell us when the system is not operating properly. On their system the customer and the repairman find out the hard way.
- (16) Trunk answer any station is a strong feature on our systems. How many trunks can be answered on their system at one time? What's the contract say?

NON-BELL ADVANTAGES:

- (21) Camped-on calls revert back to the attendant after 30 seconds. Not a bad feature but do ALL camped-on calls revert back? How many? The call will have to be re-camped on each time. (Our systems provide visual status at all times. Theirs does not.)
- (22) The attendant can interrupt a call with this feature, regardless of its confidential nature. Will the customer sacrifice privacy? Is a warning tone heard? Can the system be set up to provide complete privacy?
- (23) With this feature privacy is eliminated. How many stations can be afforded this feature? (only those ending in "0"?) A warning tone announces the interruption but the knowledge that someone can interrupt or even eavesdrop on conversations may not generate a warm feeling. Is the tone the same as camp-on tone?
- (24) Abbreviated dialing of 3 digits to reach a 10-digit number can be provided. What is the capacity? Cost to add or change? Who has access? (We have card dialers and magicals.)
- (25) They can transfer out calls but only 2 simultaneously? Enough? We can also transfer through the attendant or with add-on conference assembly. (800A, 770, and NA4-09 offer it as an option.)
- (26) A call to station 26 which is busy can be routed to 28 by dialing 8. The call can be stepped up or down providing it is in the same 10's group. Our NA4-09 does the same thing. (Step call is used to supplement their limited hunting ability.)
- (27) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the second digit as well as, or in addition to the first digit. See PBX Glossary of Terms for strengths and weaknesses.

OKI AC 220 (SOLD BY ARCATA, LITCOM, RCA, SCOTT-BUTTNER)
VS BELL

A3-29a

BELL ADVANTAGES:

- (1) 770 has greater capacity on trunks, internal calling, total number of calls. Look for heavy requirements both now and in future and sell the benefits.
- (2) We have greater "0" trunk capacity. However, more than what they show can probably be installed in place of regular trunks. Look for passing of dial tone to restricted stations . . . can they do it?
- (3) Our 770 offers 24 simultaneous add-on conferences. They offer a maximum of 6. (How many are specified in the contract?) Is this sufficient capacity to meet customer needs? (Same circuits are used for consultation hold and station transfer.)
- (4) We transfer calls at the touch of a button (and have visual station status at *all* times). They must key-pulse the number which may increase the chance of error. They may offer a busy lamp field (optional). Does it stay lit or must it be activated by the push of a button each time for status?
- (5) The 770 and NA4-09 offer camp-on of every trunk. Does theirs? Is capacity enough? What good is a feature if there is not sufficient capacity to do the job?
- (6) The 770 offers up to 24 simultaneous consultation hold arrangements. They only offer up to 6. (Same circuits are used for add-on conference and transfer).
- (7) We have indication of camp-on. They do *NOT*. This feature is one of the most important offered because it saves time and money by letting called parties know of a waiting call. Sell the benefits.
- (8) When the power fails, so does their entire system. No one gets in or out or in between. Can the customer afford this? (Especially in an emergency?)
- (9) Our station hunting is standard and plentiful. Theirs is not but we do not know actual capacities. (Sell the need and capitalize on their weakness.)
- (10) We offer non-consecutive hunting. They do *not*. Sell the benefits.
- (11) 24 simultaneously on 770. They offer up to 6. How many are included in their bid? What does the contract say? What does the customer need and want now and in the future?
- (12) Trouble alarms tell us when the system is not operating properly. On their system, the customer and repairman find out the hard way.
- (13) This is a strong feature on our systems. How many trunks can be answered on their system at one time? What does the contract say?

NON-BELL ADVANTAGES:

- (20) The 400 line system offers 4 consoles to our 3. (This is only an advantage if the need exists).
- (21) Camped-on calls revert back to the attendant after 30 seconds. Not a bad feature but do *ALL* camped-on calls revert back? How do they revert back? Over attendant circuits? (Also, the call will have to be re-camped on each time.)
- (22) The attendant can interrupt a call with this feature, regardless of its confidential nature. Will the customer be willing to sacrifice privacy? Is a warning tone heard? Can total privacy be provided if the customer wants it?
- (23) Abbreviated dialing of 3 digits to reach a 10-digit number can be provided. What is the capacity? Cost to add or change? Who has access? We offer card dialers, magicals, etc.
- (24) They can transfer out calls but only up to 6 simultaneously? Enough? We offer it too as an option and with greater capacity. What does the customer need and want now and in the future?
- (25) A call to station 25 which is busy can be routed to 28 by dialing 8. The call can be stepped up or down, but only if it is within the same 10's group. This is the competitive answer to station hunting limitations.
- (26) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

NOTE: OKI AC 220 equipment is switched loop operation only.

Mfr & Model	OKI AC 220				WE 770A II				TELCO NA4-09											
Origin	JAPAN				U.S.A.				JAPAN											
Control	RELAY				RELAY				RELAY-COMMON											
Switching	X-BAR				X-BAR				X-BAR											
CAPACITY												H/M								
Lines Max	100	200	300	400		40	80	160	320	400		400	600							
Trunks Max	32	42	48	54		DETERMINED BY C. S. E.				110		52								
Links Max	12	18	18	20							(1)	18								
# Internal Calls	12	18	18	20						32		18								
# Total Calls	44	60	66	74						142		70								
# Consoles	1	2	3	4	(20)	2	2	3	3	3		3								
# Simultaneous Consoles	INA					2	2	3	3	3		3								
Sw Network - CCS	5					determined by C.S.E.				5.4										
Grade of Service	02					02				.02										
# Attendant Circuits	2	2	2	4		10	10	18	18	18	(2)	6							(2)	
FEATURES																				
# Add On Conferences	0-6					0-24				(3)	0-6									
Attendant Conference	0					0				0										
Attendant Busy Verification	S					S				S										
Attendant OSS/w Busy Lamps	-					0				(4)	0								(4)	
Auto Recall Attendant (Reversion)	S			(21)		-				0										
Attendant Seq Call (Senal Call)	-					-				-										
# Auto Callback - Station	-					-				-										
Busy Override - Attendant/w Tone	S			(22)		-				-										
Busy Override - Exec/w Tone	-					-				-										
Call Forward-Busy Line	-					-				-										
Call Forward-Don't Answer	-					-				-										
Call Restriction - Out Calls	S					S				S										
# Camp-On - Attendant	S #INA					unlimited				(5)	unlimited								(5)	
# Consultation Hold	0-6					24				(6)	6									
Dictation Access	0					0				0										
Indication of Camp-On	-					0				(7)	0								(7)	
Line Lockout	0					-				S										
Message Registers	0					0				0										
Message Waiting	0					0				0										
Paging Access	0					0				0										
# Power Failure Transfer	INA					4	8	16	32	40	(8)	8							(8)	
Speed Calling	0			(23)		-				-										
Station OSS	-					-				-										
# Sta Hunt-Consec # Groups Max	0	#INA				5	in 10's grp			(9)	unlimited								(9)	
# Sta Hunt-Non-Consec # Groups Max	-					S	in 10's grp			(10)	-									
Station Transfer - In Calls	0					0				0										
Station Transfer - Out Calls	0			(24)		0				0										
# Total Simultaneous Transfers	0-6					24				(11)	6									
Step Call	S			(25)		-				8										
Tie Lines	0					0				0										
Toll Denial (I & O)	S			(26)		0				0										
Toll Overriding	0					0				0										
TOUCH-TONE Equivalent	0					0				0										
Trouble Alarms	INA					S				(12)	S								(12)	
# Trunk Answer Any Station	S #INA					0	Maximum 24			(13)	unlimited								(13)	

**OKI AC 250 (SOLD BY ARCATA, LITCOM, RCA, SCOTT-BUTTNER)
VS BELL**

A3-31a

BELL ADVANTAGES:

- (1) 770 has greater capacity on trunks, internal calling, total number of calls. Look for heavy requirements both now and in the future and sell the benefits.
- (2) We have greater "0" trunk capacity. However, they may be able to add more than 4 in place of regular trunks. Look for need to contact attendant for messages, transfers, handling of calls for restricted stations, attendant paging, etc. (What does the contract say?)
- (3) Our 770 offers up to 24 simultaneous add-on conferences. They offer up to 10. (How many are in their bid?) Is there sufficient capacity to meet customer needs? (Same circuits are used for consultation hold and station transfer.)
- (4) We transfer calls at the touch of a button (to 400 lines). They must key-pulse the number which may increase the chance for error. A busy lamp field may be offered on an optional basis. Does it stay lit or must it be activated each time by the push of a button to obtain status? Our 770 offers status at all times.
- (5) The 770 and NA4-09 offer camp-on of every trunk. Does theirs? Is capacity enough? What good is a feature if there is not sufficient capacity to do the job? (What does the contract say?)
- (6) The 770 offers up to 24 simultaneous consultation hold arrangements. They offer up to 10. (Same circuits are used for add-on conference and transfer.)
- (7) We have indication of camp-on. They do NOT. This feature is one of the most important offered because it saves time and money by letting called parties know of a waiting call. Sell the benefits.
- (8) When the power fails, so does their entire system. No one gets in or out or in between. Can the customer afford this? (Especially in an emergency?)
- (9) Our station hunting is standard and plentiful. Theirs is *not* but we do not know actual capacities. (What is needed and what does the non-Bell contract say?)
- (10) We offer non-consecutive hunting. They do not.
- (11) Up to 24 simultaneously on 770. They offer up to 10 but how many are in the contract? Identify the advantages of greater capacity now and in the future.
- (12) Trouble alarms tell us when the system is not operating properly. On their system the customer and repairman find out the hard way at the expense of the customer.
- (13) This is a strong feature on our systems. How many trunks can be answered on their system at one time?

NON-BELL ADVANTAGES:

- (20) The 400 line system offers 4 consoles to our 3. (This is only an advantage if the need exists.)
- (21) Camped-on calls revert back to the attendant after 30 seconds, not a bad feature but do *ALL* camped-on calls revert back? How many are in the contract? (Also, the call will have to be re-camped on each time.)
- (22) The attendant can interrupt a call with this feature, regardless of its confidential nature. Will the customer be willing to sacrifice privacy? Is a warning tone heard?
- (23) This feature eliminates privacy. How many stations can be equipped to override? (Only those ending in "0"?) A warning tone announces the interruption, but the knowledge that someone can interrupt or even eavesdrop on conversations may not generate a very warm feeling.
- (24) Abbreviated dialing of 3 digits to reach a 10-digit number can be provided. What is the capacity? Cost to add or change? Who has access? We provide card dialers, magicalls, etc.
- (25) They can transfer out calls but only 10 simultaneously? Enough? We also offer this feature.
- (26) A call to station 26 which is busy can be routed to 28 by dialing 8. The call can be stepped up or down, but only if it is within the same 10's group. This is the competitive answer to station hunting limitations.
- (27) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

NOTE: OKI AC 250 equipment is switched loop operation only.

Mfg. & Model	OKI AC 250-B						W.E. 770A-11						TELCO NA4-09								
Origin	JAPAN						U.S.A.						JAPAN								
Control	ELECTRO-MECH.						RELAY						RELAY-COMMON								
Switching	X-BAR						X-BAR						X-BAR								
CAPACITY																					
Lines-Max	100	200	300	400	500	600	40	80	160	320	400		H/M								
Trunks-Max	15	40	40	60	60	60	DETERMINED BY C.S.E.					110	52								
Links-Max	12	17	17	24	24	24						*	(11)	18							
# Internal Calls	12	17	17	24	24	24						32	18								
# Total Calls	27	57	57	84	84	84						142	70								
# Consoles	* (20)						1	2	3	4	4	4	2	2	3	3	3				
# Simultaneous Consoles							1	2	3	4	4	4	determined by C.S.E.				5	4			
Sw Network - CCS																	02				
Grade of Service	02						02										02				
# Attendant Circuits	2						2	2	4	4	4	4	10	10	18	18	(12)	6			
FEATURES																					
# Add-On Conferences	S-10						0						24	*	(3)	0-6					
Attendant Conference	0						0						0								
Attendant Busy Verification	-						-						S								
Attendant OSS/w Busy Lamps	-						0						* (4)						0	* (4)	
Auto Recall Attendant (Reversion)	0						*						(21)	-	0						
Attendant Seq Call (Senal Call)	-						-						-								
# Auto Callback - Station	-						-						-								
Busy Override - Attendant/w Tone	S						*						(22)	-	-						
Busy Override - Exec/w Tone	S						*						(23)	-	-						
Call Forward Busy Line	-						-						-								
Call Forward Don't Answer	-						-						-								
Call Restriction - Out Calls	S						S						S								
# Camp-On - Attendant	S #INA						unlimited						* (5)						unlimited	* (5)	
# Consultation Hold	0-10						24						* (6)						6		
Dictation Access	0						0						0								
Indication of Camp-On	0						0						* (7)						0	* (7)	
Line Lockout	-						-						-								
Message Registers	0						0						0								
Message Waiting	0						0						0								
Paging Access	0						0						0								
# Power Failure Transfer	-						4						8	16	32	40	(8)	S	* (8)		
Speed Calling	0						*						(24)	-	-						
Station OSS	-						-						-								
# Sta Hunt-Consec # Groups-Max	0-40 grps of 4						S						in 10's grps						* (9)	S-unlimited	* (9)
# Sta Hunt-Non Consec # Groups-Max	-						S						in 10's grps						* (10)	-	
Station Transfer - In Calls	0						0						0								
Station Transfer - Out Calls	0						* (25)						0	0							
# Total Simultaneous Transfers	0-10						24						* (11)						6		
Step Call	S						* (26)						-	S							
Tie Lines	0						0						0								
Toll Denial (1 & 0)	S						* (27)						0	0							
Toll Diverting	0						0						0								
TOUCH TONE Equivalent	0						0						0								
Trouble Alarms	INA						S						* (12)						S	* (12)	
# Trunk Answer Any Station	S #INA						0						Maximum 24						* (13)	unlimited	* (13)

BELL ADVANTAGES:

- (1) 800A is electronic — theirs is X-Bar (30 years). Ours is modern, quieter, faster connecting, less troublesome, easier to repair.
- (2) The 770 and NA4-09 have greater capacity (trunks, stations, internal calling).
- (3) The 756, 770, NA4-09 provide more than 1 console. Identify need for second position with full system control (DSS, operator trunks, busy lamps, etc.)
- (4) We have more "0" circuits, they have only 2. Identify need for checking in, out, for messages, help with call transfers, out calls for restricted stations, etc.
- (5) 770 offers up to 24 simultaneous add-on conferences, theirs *unknown*. Will their machine offer sufficient capacity to take care of needs? (Circuits are used for transfer and consultation hold also.)
- (6) We offer DSS — they only a busy lamp field that does NOT stay lit all of the time. The operator must push a button to obtain status in busy lamp field and then route the call. Our busy lamp field provides current status at all times. On ours you look one place and push a button.
- (7) On 770 and NA4-09, camp-on is limited only to the number of trunks installed. How about theirs? Is there sufficient capacity to do the job? What does their contract say?
- (8) The 770 has up to 24 circuits for use during consultation hold. How about theirs? Is sufficient capacity available? (Same circuits are used for add-on and transfer.)
- (9) A station in trouble is locked out of the equipment on our system so it does not tie up circuits. Theirs does not which could cause serious failures.
- (10) We offer station DSS on the 756. They do not. (Busy executives may need DSS.)
- (11) Our station hunting is standard and plentiful. Theirs is not. Sell the need for station hunting in departments, between executives and secretaries.
- (12) We and they can hunt non-consecutively, however, we have more capacity.
- (13) Call transfer. Again more capacity on the 770. How many can their system transfer at one time? (Capacity to meet requirements is essential.)
- (14) Trunk answer any station is a strong feature on our systems. How many trunks can be answered by their system at one time?

NON-BELL ADVANTAGES:

- (15) If a camped-on call is not handled within 30 seconds it reverts back to the operator and is dropped off of "camp-on". How does it revert back to the attendant? If over an attendant trunks, there are only two. And what if the trunk answer any station feature is being used? Who picks up the reverted call?
- (16) How many trunk calls can be "sequenced" at one time? Why can't the station transfer the call? Why tie up the operator?
- (17) Is attendant busy override a good feature? Is the customer willing to sacrifice privacy? Will interruption create ill will?
- (18) Their indication of camp-on repeats itself every 12 seconds. Is this a good feature or will it cause ill will?
- (19) They can transfer out-calls but how many simultaneously? We offer it too but with greater capacity.
- (20) Good, if the customers area has "dial 1" access before making MMU calls, or if toll calls require N.P.A.'s. If neither of the above apply, the station users can dial the maximum MMU calls without denial. Dialing the long distance operator, 411 for information, or 911 for emergency service may not be possible because their equipment may recognize the *second* digit as well as, or in addition to the *first* digit. See PBX Glossary of Terms for strengths and weaknesses.

A3-33b
PLESSEY PB 100

Mfg. & Model	PLESSEY PB 100				W.E. 756A				W.E. 800A				W.E. 770A-11				TELCO NA4-09				
Origin:	CANADA				USA				USA				USA				JAPAN				
Control:	ELECTRO MECH.				RELAY				ELECTRONIC * (1)				RELAY				RELAY-COMMON				
Switching:	X-BAR				X-BAR				FERREED MATRIX & SOLID STATE				X-BAR				X-BAR				
CAPACITY																					
Lines-Max	50	100			80				80				40	80	160	320	400	400	H/M		
Trunks-Max	10	20			10-20				20							110	52		*	(2)	
Links-Max	6	10			16				10				* (2)			determined by C.S.E.	18				
# Internal Calls	6	10			8				10							32	18				
# Total Calls	16	30			13				30							142	70		*	(2)	
# Consoles	1	1			2			*	(3)	1			2	2	3	3	3	3	*	(3)	
# Simultaneous Consoles	1	1			1				1				2	2	3	3	3				
Sw Network - CCS	5.7				—				5.9				determined by C.S.E.				5.4				
Grade of Service	.02				.02				.02				.02				.02				
# Attendant Circuits	2				3			*	(4)	4			*	(4)	10	10	18	18	18	* (4)	
FEATURES																					
# Add-On Conferences	S	#INA			—				0-3				0-24			*	(5)	0-6			
Attendant Conference	0				0				0				0				0				
Attendant Busy Verification	—				—				—				—				5				
Attendant OSS/w Busy Lamps	—				0			*	(6)	0			*	(6)	0		* (6)	0			
Auto Recall Attendant (Reversion)	S			*	(15)	—			—				—				0				
Attendant Seq Call (Serial Call)	S			*	(16)	—			—				—				—				
# Auto Callback - Station	S				—				—				—				—				
Busy Override - Attendant/w Tone	S			*	(17)	—			—				—				—				
Busy Override - Exec/w Tone	—				—				—				—				—				
Call Forward-Busy Line	—				—				—				—				—				
Call Forward-Don't Answer	—				—				—				—				—				
Call Restriction - Out Calls	S				S				5				S				S				
# Camp On - Attendant	S	#INA			0		10		0-3				0-unlimited			*	(7)	unlimited		*	(7)
# Consultation Hold	S	#INA			—				3				24			*	(8)	6			
Dictation Access	0				0				0				0				0				
Indication of Camp-On	S			*	(18)	0			0				0				0				
Line Lockout	—			S				*	(9)	5			*	(9)			S		*	(9)	
Message Registers	0				0				0				0				0				
Message Waiting	0				0				0				0				0				
Paging Access	0				0				0				0				0				
# Power Failure Transfer	S	1 per comb. trunk			S-4 lines				S-4 lines				4	8	16	32	40	S			
Speed Calling	INA				—				—				—				—				
Station OSS	—				0			*	(10)	—			—				—				
# Sta Hunt Consec # Groups-Max	0-10 per 50				S in 10's grp			*	(11)	S-unlimited		*	(11)	S in 10's grp		*	(11)	S-unlimited		*	(11)
# Sta Hunt Non Consec # Groups-Max	0 in 50 grp				S			*	(12)	S-unlimited		*	(12)	S in 10's grp		*	(12)	—			
Station Transfer - In Calls	S				0				0				0				0				
Station Transfer - Out Calls	S			*	(19)	—			0				0				0				
# Total Simultaneous Transfers	INA				—				3				24			*	(13)	6		*	(13)
Step Call	—				—				—				—				S				
Tie Lines	0				0				0				0				0				
Toll Denial (1 & 0)	0			*	(20)	0			0				0				0				
Toll Diverting	0				0				0				0				0				
TOUCH TONE Equivalent	0				0				0				0				0				
Trouble Alarms	S				5				S				S				S				
# Trunk Answer Any Station	S	#INA			0-1				0-unlimited		*	(14)	0-max of 24		*	(14)	unlimited		*	(14)	

473

S Standard 0 Optional — Not Offered INA Info, Not Available * Advantage () Refer to Notes

PBX - PABX GLOSSARY OF TERMS

ADD-ON-CONFERENCE

Allows a station user to add another station within the same PBX or CENTREX system to an existing incoming or outgoing exchange network call for a 3 party conference, without attendant assistance. Normally this feature uses the same circuits as consultation hold and station transfer.

NOTE: Additional Bell capacity may be obtained by providing Bell KTS add-on.

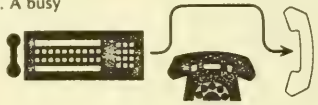
ATTENDANT CONFERENCE

Allows the attendant to establish a conference connection between central office trunks and internal stations. Limitations exist as to the number and type of trunks and stations that can be connected simultaneously.

ATTENDANT-BUSY VERIFICATION

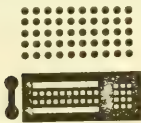
A digit display unit is used to display busy extension codes and to associate an extension that has made an out going call with the outgoing trunk. A busy lamp field provides similar status.

NOTE: More sophisticated systems utilize an electronic "syllabic indicator" which recognizes presence of speech on a trunk without call interruption.



ATTENDANT DSS e/w BUSY LAMP FIELD

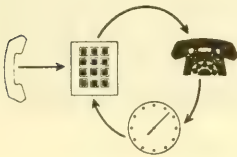
An attendant console feature that provides for a pushbutton and lamp to be associated with each extension. It allows an attendant to complete a call to a station by operating the push-button associated with that station. In addition the attendant is supplied with one source station status.



NOTE: Translucent "Status Rings" in a variety of colors may be placed over Bell System DSS buttons to indicate station status. I.E. Red means do not disturb, blue — ill, orange-out on break, yellow — vacation, etc.

AUTOMATIC RECALL ATTENDANT — (REVERSION)

Automatically alerts the attendant, after a prescribed time period, usually 15-60 seconds, to a camped-on or unanswered call completed through the console so that a status report may be given to the calling outside party. Bell refers to this feature as "timed reminder."



NOTE: Additional considerations are as follows:

- On non-Bell Systems the call may continue to ring at an unanswered station even though it has reverted back to the attendant. (The caller will usually continue to hear ringing tone and may not be aware of the "reversion" until the attendant answers. If the attendant is busy the caller may receive less than satisfactory service).
- On non-Bell systems a reverted camped-on call will usually not stay camped-on. With Bell it will and if the called station becomes free during "reversion", he will be connected to the reverted call.
- All trunks may or may not be equipped for "reversion".
- The reverted call may return to the attendant on the same incoming trunk, an attendant truck, or a special circuit. The attendant may or may not know the status of the returning call (whether new or reverted, who

it is, or who it was for).

— If there is more than one attendant position, the original attendant may not get the reverted call.

ATTENDANT SEQUENCE CALL (SERIAL CALL)

When a party on an incoming call wants to speak to more than one PABX subscriber, the attendant can arrange to have the incoming party automatically returned to the attendant position after each call is completed.



This feature is manually activated by the attendant when the incoming caller informs her that he wishes to speak with more than one internal party. (On an Ericsson ARD 561 an "S" button is activated by the attendant before the call is passed to the station user).

This feature works by holding a trunk circuit and signaling the attendant through a recall circuit after a station hangs up from an incoming trunk call.

AUTOMATIC CALL-BACK — STATION

Allows the station user, when he encounters an internal-station busy signal, to dial a single-digit number and hang up. When calling and called parties become free, both are automatically rung and connected.

NOTE: While activated, this feature does not prevent the calling station from either initiating or receiving calls. The station "camp-on" may time out after a pre-determined period of time. (15 minutes)

BUSY OVER-RIDE ATTENDANT WITH TONE

Permits the attendant entry into an existing busy connection and usually provides a warning tone to that conversation to indicate third-party entry. (However, certain systems may not provide a warning tone. For those that do, the tone may be the same as "camp-on" indication).

BUSY OVER-RIDE — EXECUTIVE (WITH TONE)

Preselected stations may be provided this feature to enable them, upon encountering busy signal on a call to an internal station, to dial a single digit (or activate a special pushbutton) and gain access to the existing conversation taking place. On some systems a warning tone may not be heard. Both interrupted parties hear the over ride except on a select few sophisticated systems where the outside party is excluded from the conversation.



NOTE: On many non-Bell systems only those stations ending in "O" have the ability to over ride. (AKD741, ARD 561, etc.)

CALL FORWARDING — BUSY LINE

This service feature automatically re-routes calls to the attendant or a predesignated station when the called station is busy.

CALL FORWARDING — DON'T ANSWER

Automatic re-routing to the attendant or a pre-designated station occurs when a given station doesn't answer within a prescribed time interval, (the exact interval depends on the type of switching system and is approximately 30 seconds).

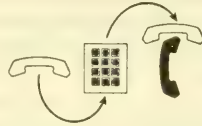
CALL RESTRICTION ON OUTGOING CALL

This service feature denies selected stations within the PBX or CENTREX system the ability to place outside calls and/or certain miscellaneous trunk calls without the assistance of the attendant.

CAMP-ON-ATTENDANT

An incoming outside call which the attendant attempts to complete to a busy station line within the system is automatically placed in a special "waiting" mode until the desired station becomes idle.

The called station is then automatically rung and connected to the incoming call without additional operator assistance.

**CONSULTATION HOLD**

By depressing the switchhook (Bell), dialing a code, or pushing a button the incoming or outgoing central office call is automatically placed on "hold" and the station is given PBX system dial tone. Upon receiving dial tone, the station user proceeds to establish connection with another internal station. After speaking with the consulted station, the original station can return to the central office call, add-on conference or transfer it to another station.

NOTE: On most systems only one of the parties may be "outside" the PBX or CENTREX system.

Some non-Bell systems are restricted to incoming call consultation hold.

Certain non-Bell vendors offer this feature as a substitute for regular hold. However, using it in this manner can tie up the switcher because normally the same internal circuits are used for other system features.

DICTATION ACCESS (AND CONTROL)

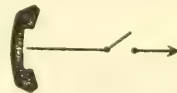
Allows station users to have dial access to centralized dictating equipment and to maintain telephone dial control of all normal dictation system features.

**INDICATION OF CAMP-ON**

This service feature provides an audible signal to a busy called station to indicate that an incoming call is camped on. On Bell Systems, subsequent bursts of tone are applied each time the attendant leaves the waiting connection after reverifying the callers desire to wait.

LINE-LOCKOUT

The switching equipment will automatically disconnect a line from the PBX network if the station handset is off hook and dial pulses are not received after a prescribed period of time. Without this feature, the "off hook" station will continue to "tie up" that portion of the switching equipment it is using.



In some instances, an off-hook signal called "howler tone," is applied to the line to attract the attention of the station user.

NOTE: Line lockout should not be confused with the attendant LOCKOUT feature which denies the attendant the ability to reenter an incoming central office call, unless recalled by the station user.

MESSAGE REGISTERS

Completed calls from each telephone on the PBX-PABX to the central office are registered on message meters. Non-Bell vendors may provide registers which are activated by (1) Our central office signal (same way ours are) thru an interconnect device or (2) thru a timeout relay which strokes a tally after 8-10 seconds.

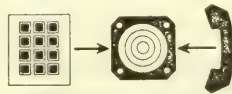
NOTE: Using method (2) the message register will tally all local calls including "911", 411, etc. In a Hotel-Motel system a guest could be charged for an uncompleted call or one that normally can be made at no extra cost (i.e. 911, 411).

MESSAGE WAITING

If a called party is out, the attendant takes the message and operates a switch on a message waiting turret. A lamp flashes on a message waiting telephone in the called party's room or at his desk to notify him that the attendant has a message.

PAGING ACCESS

Permits attendants and station users to dial access customer-owned loudspeaker paging equipment for the purpose of voice paging. Attendants may also access the voice paging equipment directly through a jack or key on the attendant position, depending on the switching system.



POWER FAILURE TRANSFER

Provides automatic transfer of central office lines to predetermined stations during a power failure when reserve power is not provided with the PBX system. This facility usually excludes special trunk circuits such as WATS, Foreign Exchange, etc. Some manufacturers provide only a limited number of trunks (in many cases, only one) as a standard facility, with an additional number being available on an optional basis. In these cases, where the maximum capabilities are known, appropriate notation is provided. Generally, central office trunks serving PBX systems are of the "ground-start" variety, and in these situations, the predetermined transfer stations, if they are to originate outgoing calls during such a power failure, must be equipped with a ground button in order to obtain central office dial tone. If power failure transfer is not provided, battery reserve power should be.



NOTE: SEE TOUCH-TONE EQUIVALENT if system is equipped with TOUCH-TONE.

SPEED-CALLING (OR ABBREVIATED DIALING)

Specific 3-digit codes are assigned to frequently called seven or ten digit central office numbers. When the 3-digit code is dialed at the PABX, the central office number is outpulsed automatically. Capacity, restriction as to who has access, and the method of inputting new or changing old numbers should be a prime consideration of this feature. (Our single digit dialers, card dialers, and magacalls may provide the customer with better service.)

STATION DIRECT STATION SELECTION

A station user can place a call to any one of a given number of preselected station lines by depressing a single pushbutton on his station associated with each station number to be included in this arrangement.

The complete telephone number is transmitted automatically by the equipment. (Available on our 756 PBX systems).

STATION HUNT-CONSECUTIVE

This service feature allows an incoming call to be directed to alternate consecutively numbered stations when the called station is busy. On most cross bar or step-by-step systems the consecutive numbers must be within

the same 10's group. On some electronic systems the consecutive numbers can continue on indefinitely.

NOTE: Most Bell systems are not limited in the quantity of hunting arrangements that can be provided. Most non-Bell systems are.



STATION HUNT-NON-CONSECUTIVE

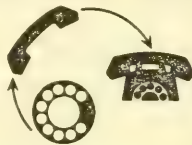
This service feature allows an incoming call to be directed to alternate non-consecutively numbered stations when the called station is busy. On most Bell and non-Bell cross bar or step-by-step systems the nonconsecutive numbers must be within the same 10's group. On some electronic systems the nonconsecutive patterns can be shotgunned throughout the system.

NOTE: Again, most Bell systems are not limited in the quantity of hunting arrangements that can be provided. Most non-Bell systems are.

STATION TRANSFER - IN CALLS

A station user can transfer only incoming central office calls to another station within the system without attendant assistance. This is accomplished by utilizing the consultation hold and/or add on conference features and then either hanging up (Bell), dialing a digit such as "1", or pushing a separate button.

This worthwhile feature is only profitable to a customer if he has a need or want for it and if the system has the capacity to satisfy his present and future requirements.



STATION TRANSFER - OUT CALLS

A station user can transfer outgoing central office calls to another station within the system without attendant assistance. (works the same as station transfer in calls). This feature can affect the total trunk capacity of non-Bell systems (in some cases, reduce it by half).

NOTE: On our systems, in call transfer must be provided. On most Bell and non-Bell systems only one party may be outside the PBX system.

TOTAL SIMULTANEOUS TRANSFERS

An important consideration when comparing Bell and non-Bell systems. Will there be enough capacity to satisfy the customers current and future needs? Most of our systems "out-power" non-Bell in this area.

STEP CALL

A method of using abbreviated dialing when dialing a busy number and the calling party wishes to speak with another station having only a different units digit number. This feature accepts dialing the new units digit directly over the busy signal without the necessity of hanging up. For example: if called station 225 is busy, by dialing the additional digit "8", connection is established to station 228. This is sometimes referred to as "Call Advance" and is used by the attendant to pass incoming calls.

TIE LINES

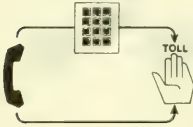
A service that provides one or more one-or-two-way circuits interconnecting two PBX or CENTREX systems. The tie line can be either rinedown,



automatic, or dial repeating and may be dial-selected by station users, and either dial-selected or manually selected by attendants, depending on the switching system and arrangement chosen.

TOLL DENIAL (1 or 0)

This form of call restriction is offered in two ways:



- (1) In areas where 1 or 0 access codes are necessary to place calls outside the local calling area, the restrictor is programmed to read the first digit dialed. If the first digit dialed is 1 or 0 (from a restricted station), the call is diverted to the attendant, a busy tone, or a prerecorded message.
- (2) In areas where access codes are not necessary the restrictor is programmed to read the first and/or second digit dialed. If either of those digits is a 1 or 0 the call is diverted as (1) above.

NOTE: Type (2) allows calls within an area code but, calls cannot be dialed to foreign area codes. The second digit in all area codes is 1 or 0. Limiting calling within an area code does not preclude the possibility of unauthorized lengthy multi-message unit calls.

ALSO: Additional attendant trunks should be provided where this type of denial is offered to allow the placement of long distance and/or multi-message unit calls through the attendant.

TOLL DIVERTING

This form of toll denial recognizes prefixes or area codes, or prefixes within area codes, and allows or denies the call. Those denied are diverted to the attendant, tone, or a recording. Diverting is provided on a system or station basis. Some toll diverters recognize only 3 digits (prefixes only) while others recognize up to 7 digits and can restrict prefixes within an area code as well as full area codes. (our Stromberg and North Electric diverters have this capability).

TOUCH-TONE® EQUIVALENT

This feature provides the same tone frequencies as TOUCH-TONE®. Registered Service Marks are used by various manufacturers:

TOUCH-TONE® (Bell System)
TONE-DIAL (Stromberg-Carlson)
KEY-CALL (North Electric)
TOUCH-CALL (Automatic Electric)
DIGI-TONE (Northern Electric)
KEY-TONE (Norelco)
TEL-TOUCH (ITT)



NOTE: Systems installed with TOUCH-TONE® to dial pulse converters to provide TOUCH-TONE® equivalent in a non-TOUCH-TONE® prefix must have power failure transfer station lines equipped with rotary dial sets or they won't work during a power failure.

TROUBLE ALARMS

These are visual indications on the attendant position which signal a fault in the system. Many of

the larger systems provide two such visual indications, one a "major" alarm and the other a "minor" alarm. This feature is often associated with an audible signal and a signal "cut-off" switch at the attendant position. All Bell Systems have trouble alarms to quickly identify potential problems.



TRUNK ANSWER FROM ANY STATION

Incoming exchange network calls, normally directed to the attendant, activate a common alerting signal on the customer's premises when the attendant positions are in night service. These calls may then be answered by any station user in the PBX or CENTREX system who dials a special code from any station.



EQUIPMENT TYPES

INTRODUCTION — Why You Need To Know

If, in the course of a direct confrontation, a non-Bell salesman states that his equipment employs Reed Relay Matrix Switching, or Crosspoint Matrix Switching, or Relay Switching — so what?

Should you really care? **You bet!** Because it is your responsibility to help keep the customer from becoming confused. This portion of your Comparison Guide is designed to take some of the "mystery" out of switching and its terminology.

What should you do, though, if a non-Bell salesman does throw out the statement that his equipment is better because it is "Ferreed Matrix" switched, or "Crosspoint" switched?

Answer his statement with a question. There are many different terms for similar switching arrangements, how does yours work? Once he has explained how it works you will find it falls under one or a combination of the following basic switching arrangements that we will describe to you.

Actually, connections may be made utilizing different types of equipment but today it is usually crossbar or electronic. **FOR EXAMPLE:** Reed Relay Matrix, Crossreed, and Ferreed Matrix Switching is the type of switching basically used in the 800A and 801A machine. Crosspoint (crossbar) switching is the type used in the 756, 770, and 757 machines.

Now, let's take a basic look at the types of switching arrangements available.

SWITCHING ARRANGEMENTS

There are 3 basic types of switching arrangements:

1) MANUAL CONTROL —

An attendant receives a signal from a station and manually makes the connection.

2) PROGRESSIVE SWITCHING (Direct Control) —

Progressive switching or direct control switching is a means of control over an automatic telephone system in which the dial pulses from the calling telephone directly control the switches which establish the desired connection. Step-by-step equipment is an example of progressive switching using direct control.

3) COMMON CONTROL SWITCHING —

Common control is a form of control in automatic telephone systems in which dial pulses from the calling telephone (constituting the address of the called phone) are registered, analyzed, and re-sent in the form of a routing code to operate switches as required to establish the desired connection. The common control equipment is occupied only during the time a connection between two subscribers is being constructed and not during the resulting conversation.

The two types of common control are **Electro-mechanical** and **Electronic**.

The **Electro-Mechanical Common Control** utilizes electro-mechanical relays in the decision making process of controlling the call and the **Electronic Common Control** utilizes solid state diodes. Both perform the same function but electronic is faster and quieter and is being used more often in the newer, more sophisticated systems.

Examples of **Electro-Mechanical Control** are:

756	OKI AC120, 220, 250
757	Plessey PB100
770	Hitachi DAX-1, AX2-S, AX3-S
NA4-09	Ericsson AKD741, ARD561

Examples of **Electronic Solid State Control** are:

800A	Executone 1000
801	Pulse PABX
812	T/R 32



Step-by-Step

The types of "switches" operated by the common control unit are:

CROSSBAR —

Mechanical movement of horizontal bars is necessary to establish a connection. Movement of the bars controlled by electromagnetic equipment establishes proper electrical paths through the switching equipment. Examples are: The 756, 757, 770; Hitachi DAX-1, AX2-S; OKI AC120, 220, 250; etc.

NOTE: Other names for crossbar type switching are:

- Crosspoint
- Code Switch (similar to Crossbar but a little smaller)

ELECTRONIC-SEMI-SOLID STATE —

Calling path is picked electronically and electro-magnets complete contact for completion of calls. Limited mechanical movement is required to complete the connection. Examples are: The 800A, 801, and Stromberg-Carlson Crossreed 400 and 800.

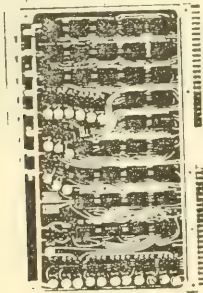
NOTE: Other names for electronic-semi-solid state are:

- Glassreed
- Reed Relay Matrix
- Crossreed
- Ferreed Matrix

Glass-read switch

ELECTRONIC-SOLID STATE —

Has no mechanical parts to wear out. Machine is programed in its magnetic memory to carry out its functions. Instantly directs the handling of all calls upon completion of dialing. Examples are: The ESS101, Executone 1000, Northern Telecom Pulse, and T/R 32.



ALPHABETICAL LIST OF ALL PBX's — BY MANUFACTURER

<u>MANUFACTURER & MODEL</u>	<u>LINE CAPACITY</u>
A.E.I. TELECOMMUNICATIONS (CANADA), LTD.	
Type 85	100
Type 51C Cord	Unlimited
Type 97 Cordless	Unlimited
BUDAVOX	
RA-8-2	8
RA-15-2	12
RA-24-2	20
CA-22	20
CA-42	80
CA-102	300
* L. M. ERICSSON	
AMD-503	3
AMD-512	5
AMD-516	8
AMD-518	10
ARD-520	10
ARD-526	16
AKD-741/3	50
AKD-561/2	270
CP-100 F-1	1000
CP-100 F-2	1000
* FUJITSU	
FXB-106U	80
FXB-304U (150-line arrangement)	150
FXB-304U (400-line arrangement)	400
FXB-506U	800
GTE — AUTOMATIC ELECTRIC	
25M	25-30
40B	40
40KS	40
40M	40
80A	80
80KS	80
80M	80
100	500

*Sold in our area

MANUFACTURER & MODEL	LINE CAPACITY
GTE — AUTOMATIC ELECTRIC (cont'd)	
301	2000
311	10000
320	Unlimited
* HITACHI, LTD.	
DAX 1 (attended)	80
DAX 1 (unattended)	80
AS2S	600
AX3S	4800
* ITT — COMMUNICATIONS EQUIPMENT & SYSTEMS	
Pentomat 600T	200
Pentomat 200T	400
TE-400	400
TE-400A	400
Pentomat 200T (Hotel)	436
TE-400G	800
TE-400H	800
TE-400P	800
Pentomat 1000T	9000
INFORMATION DYNAMICS CORPORATION	
IDX-230A	30
IDX-230B	30
IDX-290	270
* LITCOM DIVISION — LITTON SYSTEMS, INC.	
CB-120	90
CB-220	400
CB-250	600
* MEISEI	
Mini-Max	27
Max-B	80
Max-S	80
* NIPPON ELECTRIC COMPANY, LTD.	
NEPAX 100 A type	100
NEPAX 100 D(B) type	100
NA4-09	400
NA4-09 - Hotel/Motel, Package I	400
NA4-09 - Hotel/Motel, Package II	600
NG403	4500

*Sold in our area

<u>MANUFACTURER & MODEL</u>	<u>LINE CAPACITY</u>
NORELCO (PHILIPS)	
EBX 15	15
UH 30	30
UH 45	45
UH 300	300
UH 900	900
* NORTH ELECTRIC	
AKD-741	50
ARD-561	270
NX-2	3000
NX-1D	20000
NORTH ELECTRIC CO., LTD.	
SE-1	36
SG-1	80
SE-2	200
* OKI	
AC-120	90
AC-150	120
AC-220	400
AC-250	600
* PLESSEY COMMUNICATION SYSTEMS CORPORATION	
810	90
PB 100	100
820	400
850	600
RELIABLE COMMUNICATIONS PRODUCTS CO., INC.	
CB-12	62
CE-10	100
CG-19	100
STROMBERG-CARLSON	
Series 20	25
Series 10 (Hotel/Motel)	35
F-50A	50
F-80A	80
Series 30 HR	100
Series 30 FR, GR	100
CROSSREED 400A	400
CROSSREED 800	800
CROSSREED PABX E	10000
Type H	Unlimited

* Sold in our area

<u>MANUFACTURER & MODEL</u>	<u>LINE CAPACITY</u>
TELE-NORM CORPORATION	
11-D	25
11-F	50
WESCOM, INC.	
501 (Business)	120
501 (Motel)	120
* WESTERN ELECTRIC COMPANY, INC. (Bell System)	
558A	40
756A	60
805A	59
800A	80
801A - Heavy Traffic	180
757A	200
801A - Light Traffic	270
801A - Medium Traffic	270
101 ESS (2A)	364
770A - Heavy Traffic	400
101 ESS (3A)	820
812	1800
101 ESS (4A)	4000
701B	Unlimited

*Sold in our area

LIST OF ALL PBX's - BY LINE SIZE

<u>MANUFACTURER</u>	<u>MODEL</u>	<u>LINE CAPACITY</u>
<u>1 TO 40 LINES</u>		
Ericsson	AMD-503	3
Ericsson	AMD-512	5
Budavox	RA-8-2	8
Ericsson	AMD-516	6
Ericsson	AMD-518	10
Ericsson	ARD-520	10
Budavox	RA-15-2	12
Norelco	EBX 15	15
Ericsson	ARD-526	16
Budavox	CA-22	20
Budavox	RA-24-2	20
GTE-Automatic Electric	25M	25
Stromberg-Carlson	Series 20	25
Tele-Norm	11-D	25
* Meisei	Mini-Max	27
Information Dynamics	IDX-230A	30
Information Dynamics	IDX-230B	30
Norelco	UH 30	30
Stromberg-Carlson	Series 10 (Hotel/Motel)	35
Northern Electric	SE-1	36
GTE-Automatic Electric	40B	40
GTE-Automatic Electric	40KS	40
GTE-Automatic Electric	40M	40
Western Electric	558A	40
<u>41 TO 80 LINES</u>		
Norelco	UH 45	45
* Ericsson	AKD-741/3	50
* North Electric	AKD-741	50
Stromberg-Carlson	F-50A	50
Tele-Norm	11-F	50
Western Electric	805A	59
* Western Electric	756A	60
Reliable Communications	CB-12	62
Budavox	CA-42	80
* Fujitsu	FXB-106U	80
GTE-Automatic Electric	80A	80
GTE-Automatic Electric	80KS	80
GTE-Automatic Electric	80M	80

*Sold in our area

<u>MANUFACTURER</u>	<u>MODEL</u>	<u>LINE CAPACITY</u>
<u>41 TO 80 LINES (cont'd)</u>		
• Hitachi	DAX 1 (attended)	80
• Hitachi	DAX 1 (unattended)	80
• Meisei	Max-B	80
• Meisei	Max-S	80
Northern Electric	SG-1	80
Stromberg-Carlson	F-80A	80
• Western Electric	800A	80
<u>81 TO 200 LINES</u>		
• Litcom	CB-120	90
• Oki	AC-120	90
• Plessey	810	90
A.E.I.	Type 85	100
• Nippon	NEPAX 100 A Type	100
• Nippon	NEPAX 100 D(B) Type	100
Plessey	PB 100	100
Reliable Communications	CE-10	100
Reliable Communications	CG-19	100
Stromberg-Carlson	Series 30 HR	100
Stromberg-Carlson	Series 30 FR, GR	100
• Oki	AC-150	120
Wescom	501 Business	120
Wescom	501 Motel	120
• Fujitsu	FXB-304U	150
Western Electric	801A - Heavy Traffic	180
ITT	Pentomat 600T	200
Northern Electric	SE-2	200
• Western Electric	757A	200
<u>201 TO 400 LINES</u>		
• Ericsson	ARD-561/2	270
Information Dynamics	IDX-290	270
• North Electric	ARD-561	270
Western Electric	801A - Light Traffic	270
Western Electric	801A - Medium Traffic	270
Budavox	CA-102	300
Norelco	UH 300	300
• Western Electric	101 ESS (2A)	364
• Fujitsu	FXB-304U	400
ITT	Pentomat 200T	400

*Sold in our area

<u>MANUFACTURER</u>	<u>MODEL</u>	<u>LINE CAPACITY</u>
<u>201 TO 400 LINES (cont'd)</u>		
* ITT	TE-400	400
* ITT	TE-400A	400
* Litcom	CB-220	400
* Nippon	NA4-09	400
* Nippon	NA4-09 Hotel/Motel Pkg. I	400
* Oki	AC-220 AA	400
* Oki	AC-220 AC	400
* Plessey	820	400
* Stromberg-Carlson	CROSSREED 400A	400
* Western Electric	770A - Heavy Traffic	400
<u>401 TO 600 LINES</u>		
* ITT	Pentomat 200T (Hotel)	436
GTE-Automatic Electric	100	500
* Hitachi	AX2S	600
* Litcom	CB-250	600
* Nippon	NA4-09 Hotel/Motel Pkg. II	600
* Oki	AC-250	600
<u>601 TO 1000 LINES</u>		
* ITT	TE-400G	800
* ITT	TE-400H (Hotel)	800
* ITT	TE-400P	800
* Stromberg-Carlson	CROSSREED 800	800
* Western Electric	101 ESS (3A)	820
Norelco	UH 900	900
Ericsson	CP-100 F-1	1000
Ericsson	CP-100 F-2	1000
<u>1001 TO UNLIMITED LINES</u>		
Western Electric	812	1800
GTE-Automatic Electric	301	2000
North Electric	NX-2	3000
* Western Electric	101 ESS (4A)	4000
* Nippon	NG403	4500
* Hitachi	AX3S	4800
* ITT	Pentomat 1000T	9000
GTE-Automatic Electric	311	10000
Stromberg-Carlson	CROSSREED PABX E	10000
North Electric	NX-1D	20000
A.E.I.	Type 51C	Unlimited
A.E.I.	Type 97	Unlimited
GTE-Automatic Electric	320	Unlimited
Stromberg-Carlson	Type H	Unlimited
* Western Electric	701B	Unlimited

*Sold in our area

LOCAL KTS VENDOR CROSSHATCH CHART - WHO SELLS WHAT

TYPE OF EQUIPMENT AND PLACE OF MANUFACTURE	CAPACITY			VENDORS												
	C.O. LINES	STATIONS	INTERCOM	ARCATA	I.T.T.	LITCOM	RCA	SCOTT- BUTNER	STROMBERG- CARLSON	UBC	UCS	PFI				
ARCATA CUSTOM KEY (SAME AS TIE-NITSUKO) (JAPAN)	10	30	2*	X												
NIPPON 12 LINE (JAPAN)	12	30	4*					X								
IWASAKI 10-30 (JAPAN)	12	30	4*	(NOT SOLD LOCALLY)												
IWATSU 10-30 (JAPAN)	10	30	2*	(NOT SOLD LOCALLY)												
SHIMCOM 10-30 (JAPAN)	10	30	2*									X				
TIE/NITSUKO 10-30 (JAPAN)	10	30	2*	X		X		X		X	X					
TIE 20-40 (JAPAN)	20	40	3*	X		X		X		X	X					
STROMBERG-CARLSON (USA)	(SIMILAR TO BELL)			X				X	X	X	X	X				
I.T.T. (USA)	(SIMILAR TO BELL)			X	X		X	X		X	X					
NORTH-ELECTRIC (USA)	(SIMILAR TO BELL)									X						
AUTOMATIC ELECTRIC (USA)	(SIMILAR TO BELL)			X												
VOYCALL (Now owned (USA) by Arcata)	(TO BE PROVIDED)			X												

* Additional intercom paths may be added, but C.O. line capacity is reduced.

KTS — COMPARISON OF EQUIPMENT

KTS MANUFACTURER & MODEL/ORIGIN	ARCATA CUSTOM KEY T.I.E. NITSUKO-1030 JAPAN	NIPPON 12 LINE JAPAN	OSAKA 1030 JAPAN	IWATSU 1030 JAPAN	SHIMCOM 1030 JAPAN	T.I.E. TELEPHONE 112040 JAPAN								U.S.A. STROMBERG CARLSON I.T.T. NORTH ELEC. INDUST. ELECTRIC	BELL
C.O. LINES - MAX	12(1)	12(1)	12(1)	10	10	20									* Set Size Deter.
STATIONS - MAX	30	30	30	30	30	40*									40*
AUTO BUTTON RESTORAL	S*	S*	INA	--	INA	S*									---
AUTO PRIVACY	S*	S*	INA	0	0	S*									0
BELL VOL. CONTROL	INA	INA	INA	INA	INA	S*									S*
CAMP-ON (INTER-COM)	---	---	---	---	---	INA									0*
CHOICE OF TELEPHONES	---	---	---	---	---	---									0*
DICTATION ACCESS	INA	INA	INA	INA	INA	INA									0*
HANDS FREE INTER-COM															
-ONE-WAY	S*	II	INA	0	0	S*									0
-TWO-WAY	---	---	INA	INA	INA	0*									0*
HEADSET JACK	INA	INA	INA	INA	INA	INA									0*
HOLD	S	S	S	S	S	S									S
INTERCOM PATHS	3(1)	4(1)	4(1)	4	4(2)	3									Any 2 * Required(1)
MULTI-LINE CONF.	0	0	INA	INA	INA	S*									0
MUSIC ON HOLD	0	II	0	0	0	0									0
MESSAGE WAIT	---	---	---	---	---	---									0
NO COST COLOR	INA	INA	INA	INA	INA	S*									S*
PAGING ACCESS	0	0	INA	0	0	0									0
PRE-SET INTERCOM CONFERENCE	0	II	INA	INA	0	0									0
STATION CONFERENCE	II	0	0	0	0	S*									II
SPEAKERPHONE IN SET	---	---	---	---	---	0									0
STATION DSS-INTERCOM	---	---	---	---	---	0									II
TOUCHTONE OR EQUIV.	0	INA	INA	0	INA	0									0
TOLL RESTRICTION	0	INA	INA	INA	INA	0									--
ZONE PAGING	0	II	INA	0	0	0									0

Notes (1) Each Intercom Path reduces C.O. Line Capacity by 1.
 (2) Each Intercom over 2 reduces the C.O. Line Capacity by 1.
 * Advantage

EXHIBIT 15.—*Bell Laboratories Final Report on "Short Range Customer Switching Study" (Excerpts)*

SHORT RANGE CUSTOMER SWITCHING STUDY

VIEW OF PROPOSED PRODUCT LINE

Each TELCO was asked to comment on the AT&T PBX planning letterB, which described the proposed 801A, 805A, and growable network 800A PBXs, and presented plans for rerating the 701B, 756A, and 757A PBXs A&M-only. The TELCOs felt that it would be a mistake to A&M the 700-series PBXs because the 800-series PBXs were more expensive. Not all TELCOs were completely familiar with the proposed product line and the comments on it were generally sketchy. Having been burned too often, the TELCOs simply do not believe AT&T/BTL price and availability estimates. This credibility gap resulted in little attention being paid to the aforementioned planning letter and therefore a lack of familiarity with the proposed product line.

EXHIBIT 16.—*A.T. & T. Study on Hotel/Motel Systems*

SYSTEM WIDE HOTEL/MOTEL STUDY—MAY 1970

MARKET AND SERVICE PLANS CUSTOMER TELEPHONE SERVICES SECTION

REASON FOR A STUDY OF THE HOTEL/MOTEL INDUSTRY

[Material deleted.]

The industry has expressed dissatisfaction with the Bell System in past years. They have complained that we have ignored their problems, discriminated against them with the rates we charge for guest service and commission treatment, and we are not providing them with modern communications equipment. They are becoming more cognizant of these factors as outside suppliers and consultants are constantly bringing it to the industry's attention.

INDUSTRY COMMENTS

[Material deleted.]

The major areas of complaint were directed toward our high cost of service, commission treatment, out moded PBX dial equipment without modern consoles and equipment cabinets that required a minimum amount of floor space.

[Material deleted.]

EXHIBIT 17.—*Correspondence Between ARCATA Communications, Weyerhaeuser Co., and Pacific Northwest Bell Re Cost for Purchase of Cable/Hardware*

ARCATA COMMUNICATIONS, INC.,

February 17, 1971.

Mr. ROBERT W. ST. PIERRE,
Weyerhaeuser Company,
Perkins Building,
Tacoma, Wash.

DEAR BOB: This is to explain our delay in providing you with our proposals for telephone system installations at the Springfield/Cottage Grove, Oregon facilities. You had requested our proposals by February 15 but we have been unable to comply for the following reasons—

Per established procedures with Pacific Northwest Bell (and other telephone companies throughout the country), we requested costs for existing cable from S. G. Ridings (PNB's Marketing Supervisor) via telephone on January 20. We advised Mr. Ridings that we needed this information no later than February 10 and he assured us that he could foresee no problems in meeting this timing requirement.

On January 25, I met PNB's S. R. Pigott in your offices and he advised that he was handling the foregoing matter—assuring that he would see that the timing requirement was met.

On January 26, I confirmed the foregoing via letter to Mr. Pigott.

On February 9, Mr. Pigott delivered a letter of that date (addressed to you)—stating that a \$1,000.00 charge would be assessed by PNB for their efforts in determining the price for which they would be willing to sell the existing cable (to you) at the two Oregon facilities. This letter indicated that a copy was directed to me.

On February 11, I received my copy of the foregoing letter—forwarded from PNB's Headquarters, 821 Second Avenue, on February 10.

We should explain that this is the *first* instance of PNB's request for a fee—to determine the selling price of existing cable to Arcata; and, this is the first instance of an Arcata request resulting in a reply to our client. Further, we have received pricing for other PNB customers' cable, from PNB, *after PNB's letter of February 9 to you*, with no suggestion that a fee would be involved for their determination of cable prices.

Obviously, it's difficult to understand the Utility's logic in any phase of this matter—

Our completely normal request to PNB resulted in a reply to you.

You are asked to pay \$1,000.00 to PNB for their determination of their selling price for the cable.

Prior and subsequent to the foregoing, PNB quoted selling prices of cable to Arcata—with no fee involvement—for clients whose telephone system importance to Bell/A.T.&T. is negligible, compared to Weyerhaeuser.

The total illogic of the foregoing is compounded by the facts that A) Weyerhaeuser paid PNB sizable installation costs for the cable involved—presumably for the cost to PNB for labor and cable at the time of installation, B) PNB's established policy (prior to F.C.C.'s interconnect ruling) was to *not* remove existing cable (no salvage value and cost of labor for removal), and C) PNB's policy (since F.C.C.'s interconnect ruling) is to remove cable and/or sell existing cable. The latter can only result in increased operating costs for PNB and/or requests to the Utility Commission for rate increases for PNB—to offset their labor costs in removing existing cable which has no real salvage value.

We view this matter as most serious and are reviewing it with our attorneys for possible action in this regard.

We are unable to provide you with the requested proposals for the Springfield/Cottage Grove facilities at the desired timing, due to the Utility's actions relative to the existing cable. We must request an extension to at least March 15 to permit us to handle the matter with PNB. Your cooperation will be most appreciated.

Yours very truly,

R. J. MOORE,
Regional Vice President.
PACIFIC NORTHWEST BELL,
Seattle, Wash., February 9, 1971.

Mr. R. W. S. PIERRE.

Manager, Telecommunications Engineering, Weyerhaeuser Company, Perkins Building, Tacoma, Wash.

DEAR BOB: A recent meeting was attended by representatives of Weyerhaeuser, Arcata and PNB at which possible changes in your communications services at your Springfield and Cottage Grove plants were discussed. At the meeting it was requested that PNB provide data regarding the value of the inside telephone wiring facilities serving these plants.

In times past we had very few requests for information of this type, and we used to obtain and furnish it to our customers without extra charge. Now, however, due to the number of similar requests and to the amount of work involved in making these wiring inventories, we have found it necessary to bill our customers for the actual costs of such inventories.

We estimate that the cost of making the requested survey will be \$1,000. We anticipate that the results could be provided to you by February 16, 1971, if the survey were commenced today.

If you agree to this proposal, please sign below, and we shall bill you for the actual costs for this survey.

Sincerely,

S. R. PIGOTT.
ARCATA COMMUNICATIONS, INC.,
February 26, 1971.

Mr. S. G. RIDINGS,
Pacific Northwest Bell,
Seattle, Wash.

DEAR STAN: This is in regard to our recent request (to you) for costs for our purchase of cable/hardware at Weyerhaeuser's facilities—Springfield and Cottage Grove, Oregon.

You and your Steve Pigott assured me that you would comply with this completely normal request and assured me that I would be provided with the requested costs prior to February 15, 1971.

As you know, your Steve Pigott delivered a letter of February 9, on that date, directly to our mutual client, who had made no request for cable/hardware costs. I received my copy of this letter several days later.

In Pigott's letter of February 9, it was asked that Weyerhaeuser agree to pay your firm an estimated \$1,000.00 for your efforts in determining your selling price for this cable/hardware; in fact, it was asked that Weyerhaeuser sign a copy of this letter to validate their agreement to pay \$1,000.00 for information that they did not request.

This is to document our formal protest to your firm's handling of this matter and to advise that we are reviewing the situation most seriously.

Regardless of the foregoing, we must advise you that your request for payment of any fee on this basis requires your written advice as regards your policies/procedures in determining selling prices for cable/hardware—

Is pricing based on your inventory of cable/hardware materials only—including depreciation from the date of installation?

If the foregoing is not true (although other than this would be difficult to understand), please advise your *exact* policy for determining the prices.

Due to your delays and non-compliance with our prior requests in this specific application, we insist that you provide us with the requested pricing policy (in detail) no later than March 8, 1971. Please direct your letter to me at the following location—

Arcata Communications, Inc., 120 Montgomery Street, Suite 1725, San Francisco, Calif.

Apparently it's necessary that I remind that this request is from Arcata Communications, Inc. and your reply must be directed to Arcata Communications, Inc.

Yours very truly,

R. J. MOORE,
Vice President.

EXHIBIT 18.—*Letter From Radar Electric Co. to Pacific Northwest Bell Re Consumer Information Pamphlet on Interconnect*

RADAR ELECTRIC CO., INC.,
SEATTLE, WASH., September 14, 1973.

PACIFIC NORTHWEST BELL,
1101 Fourth Avenue,
Seattle, Wash.

DEAR SIR: We received your Consumer Information pamphlet 8/73 along with our (large) telephone bill.

It appears to me that it would be much better for the nation and possibly better for the phone company if you would get off the absolute monopoly kick and quit attempting to make it impossible for anyone to compete equipment wise with the telephone company.

The pamphlet you sent out seemingly as a consumer service is nothing but a poorly disguised effort to limit or stop competition. The lame excuse that other peoples equipment would seriously effect service is at best a lame excuse.

Some agency such as the F.C.C. could easily set standards to be adhered to in compatible equipment.

Your effort to scare people away from competitive equipment may well one day be the basis of a logical ruling to limit the telephone company to lines only and dis-allow the phone company from sale or rental of equipment.

Until recent court decisions the phone company has had no competition. Your rates have been determined by the amount you spent for a percentage return on your investment.

The importance of this mode of communication and the financial costs to the consumer as well as poor service demands this strangle hold monopoly be broken.

Sincerely ;

W. McPHERSON.

Enclosure.

PACIFIC NORTHWEST BELL

Consumer Information

**BEFORE YOU INSTALL ANY TELEPHONE EQUIPMENT OF YOUR OWN, DO ONE THING
CALL ON US BEFORE YOU MAKE AN EXPENSIVE MISTAKE**

You may have seen advertisements for telephones that you can buy at a store, take home and simply plug in.

It's not that easy. And buying a telephone of your own could be just the beginning of an expensive mistake.

Every customer-provided telephone, every piece of telephone equipment installed or interconnected with our network, must either be modified and installed by us or provided with a special connecting arrangement by us. We must do this to protect the integrity of the telephone network. It's basically a question of compatibility. A telephone that is not compatible with the system can seriously affect the service of thousands of other telephone users.

If you have any questions about connecting a telephone to the Bell System network, call on us at your Pacific Northwest Bell business office. A service representative will be happy to explain the charges and procedures to be followed.

THINGS YOU SHOULD KNOW BEFORE YOU "INSTALL" YOUR OWN TELEPHONE

First, please remember that if you buy a telephone, we must either replace the working parts with our standard parts before we can connect it with the network, or we must install a special interconnecting device between your new phone and the network.

There is a one-time charge for putting our standard parts in a customer-provided phone. It can range from \$10 to \$25 depending on whether or not we need to make special modifications. If it is to be used as an extension telephone, a monthly charge of \$1.25 plus a one-time service connection charge of \$20 will also be applied. If we have to install a special interconnecting device there will be a one-time charge ranging from \$20 to \$30 depending on the type of device needed, plus a monthly charge of from 50¢ to \$6.50.

Remember, too, that your purchase of a telephone will not reduce what you are legally obligated to pay for. It's actually an additional expenditure.

Before you buy, or install any telephones, please call on us first.

IF YOU'VE ALREADY CONNECTED SOMETHING TO THE TELEPHONE SYSTEM. . .

It is illegal to connect any sort of telephone equipment to the Bell System network without first making arrangements with the telephone company.

If you have installed equipment of your own without a special telephone company connecting arrangement, please disconnect it. If you want it reinstalled legally, call our business office and a service representative will be glad to help you.

If you have any questions about what you can and cannot legally connect to the telephone system, please call on us.

You'll find the business office listed in the Call Guide section in the front of your telephone directory.

EXHIBIT 19.—*Letter From Langford Interconnect Telephone Co. to NATA Re Customer Problems With Long Distance Calls*

LONGFORD INTERCONNECT TELEPHONE CO.,
Portland, Oreg., December 11, 1973.

Mr. JAMES F. HOLMES,
North American Telephone Association,
Washington, D.C.

DEAR MR. HOLMES: I wish to report herein an incident which occurred here in Portland, Oregon today.

Our good customer, Norm Thompson Outfitters, is presently having problems with disconnects on long distance telephone calls; primarily calls to and from places east of the Mississippi River.

Mr. Max Morris of Norm Thompson reported this to Pacific Northwest Bell this morning, talking to a Ms. Sue Ferguson, the Bell Communications Consultant.

Mr. Morris was told by Ms. Ferguson, "you should put in P.N.B. equipment and then see if you still have the disconnect problems."

Our technician was on Norm Thompson's premises this morning and satisfied himself that the disconnect problems on long distance calls were not ours. He so advised the customer.

Quite frankly, the customer is upset and it is our candid opinion that this is the type of incident in which Senator Hart's group will be very interested.

You see, Bell will say things like this, but will not write anything down and will deny later what was actually said.

Yours very truly,

MALARKEY WALL,
Vice President.

EXHIBIT 20.—*Michigan Bell Telephone Manual on Rates (Excerpt)*

INTRODUCTION

Purpose of the training program.

To equip contact people to explain to customers why the rate case and what it consists of.

To equip contact people to intelligently discuss the impact of the rate case on specific customers.

PBX and key equipment restructuring concepts are completely foreign to our contact force.

Knowledge of the new restructuring concepts is essential for "smart selling" in the interim between filing of the rate case and the rate order.

Knowledge of restructuring concepts could provide our contact people with an edge in competitive encounters.

Knowledge of the rate case, particularly restructuring, is essential for the customer contact program that is proposed.

Overview of what the training will entail.

Why we are going to Lansing.

Rate case details.

Restructuring.

The impact of restructuring on the market.

How to reprice.

Selling considerations.

Customer contact program.*

Market coverage.*

KEY SET & CALL DIRECTOR LOSSES

We currently lose up to 50 percent of key systems without a chance to compete. That part of the market that is most vulnerable today, will receive a rate decrease under restructuring. Contact with those customers who are getting decreases should improve our opportunities to compete and to win. Even our head-to-head win percentage should be improved.

* Covered with sales managers and DSM's only.

EXHIBIT 21.—*Closing Remark of H. I. Romnes at A.T. & T. President's Conference in Phoenix, Ariz., November 12, 1970*

COMPETITION

This discussion left me very uncomfortable and I hope it did for you too.

We should be uncomfortable about: performance; quality of our contact people; our prices compared with that of others; and the slowness of our innovative efforts in this area—starting with BTL.

Are we organized right?

Are we using the talent in the data field which we developed at Cooperstown at a very high cost? Use it even tho it requires higher management levels in the data field.

EXHIBIT 22.—*Excerpt from A.T. & T. Publication Re Functions of A.T. & T. Marketing Organization*

A.T. & T.,
November 15, 1973.

PERSPECTIVE: WHALEN DESCRIBES FUNCTIONS OF A.T. & T. MARKETING ORGANIZATION

Recently, AT&T Chairman John deButts asked Kenneth Whalen, then president of Michigan Bell, to come to AT&T as VP-Marketing and "Assure effective leadership of the Bell System's market development and customer sales efforts."

He said he wanted Mr. Whalen to organize a structure which would "assure an alert, coordinated response in competition and to the increasingly sophisticated requirements of customers." Mr. deButts also said he wanted the Bell System's marketing resources mobilized to bring its technology to bear on changing business conditions.

This week Whalen appointed a fourth director in the new marketing department, and outlined his concept of how the group will work.

UNIFIED MARKETING APPROACH

"We're going to take a unified approach to marketing from customer need through finished product, and then we're going to market that product, or service, aggressively," Whalen said.

"In other words, we're going to find out what people really want and need, in the business terminal market, then get it to them."

Here is how the new marketing department is set up:

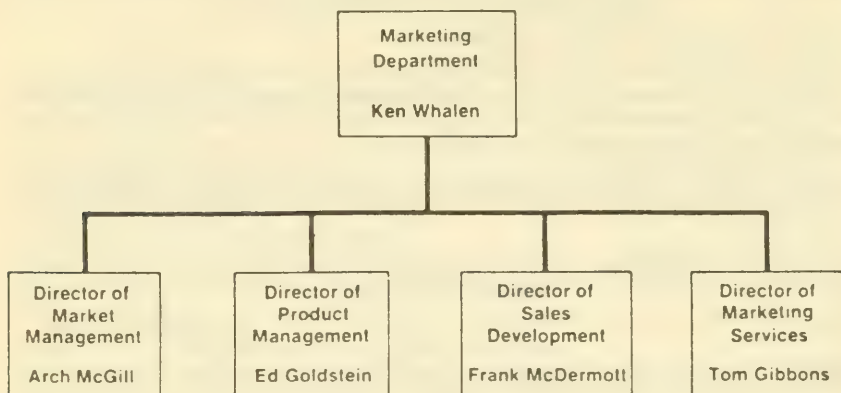
The market management organization under Archie McGill (see separate story) will be responsible for developing comprehensive marketing plans that will achieve specific profitability goals and meet specific needs of individual market segments. McGill will also assure that technical evaluations of general trade business terminal equipment are made for use in the product line when appropriate.

PRODUCT MANAGEMENT GROUP

The product management group headed by Ed Goldstein will be responsible for seeing that equipment and pricing policies meet the recommendations of the market management group for evaluating non-Bell equipment in the business terminal market, and for, in general, implementing the product and pricing needs identified by the market management group.

AN EFFECTIVE SALES FORCE

The sales development group under Frank McDermott will make sure the sales force is effective and fully competitive. The main measurement will be how revenue objectives are met. The job will include eliminating unnecessary administrative detail from the salesman's job, developing programs on recruitment and training, and providing promotional information to the salesman.



The marketing services group under Thomas Gibbons has the department's support job. This group will handle product and market research, develop competitive data bases for the Bell companies, and coordinate advertising and sales promotion programs.

The development of a marketing strategy will be accomplished by examining groups of industries arranged according to similarities in their usage, movement and equipment needs.

The first three market groupings, or segments, picked for study and evaluation are:

1. Medical institutions, large hotels and hotel chains and small to medium-sized hotels and motels.
2. Medical and professional firms, automotive dealers, clubs, churches and non-profit organizations.
3. Major manufacturers, mass merchandising retailers and medium to small department and variety stores.

The main responsibility for the study of each group, or segment, will be given to a task force with specialists on pricing, products and competition.

REAL NEEDS OF CUSTOMERS

The task force studying each group will look for the real needs of the customer, the profit potential from that part of the market, and the strength of the competition.

Once the study of each segment, or market group is completed, then a marketing strategy will be developed with a detailed marketing plan for that segment of the market. The plan will include such things as product line, pricing policy, advertising and sales promotion tools and sales programs.

And Whalen makes it clear that marketing considerations will play a big role in setting priorities for the development and production of telecommunications equipment and services.

MEETING ALL CHALLENGES

"Our aim is to make sure that our marketing effort provides clear evidence to employees, customers, shareholders and others that we will not give up any market in which we can provide superior service profitably."

Looking to the future, Whalen stressed great confidence "in the proven ability of the operating companies together with Bell Labs and Western Electric to meet any and all challenges in the telecommunications field."

EXHIBIT 23—*Section From Bell Sales Manual Re Toll Diverting Equipment*

[From Bell Sales Manual, vol. 1, September 1964]

TOLL DIVERTING

Description

Toll diverting equipment is a means of rearranging central office circuits so "A" board toll and long distance calls will be placed through a P.B.X. attendant and not dialed direct by station users having access to central office lines.

Market Considerations

All dial P.B.X. customers served from dial exchanges except 750A or 755A installations.

This is a vast market however, *the telephone salesman's job is to sell service, not discourage it. Toll diverting in effect will discourage toll usage, therefore diverting equipment should be sold on a demand basis only.*

Customer Appeals

NONE—Demand business only.

Characteristics

Toll diverting is an optional feature which can be provided for dial P.B.X. customers.

There are two types of diversion available depending on the central office calling area involved.

One type diverts "O" and "LD" traffic while the other can be arranged to divert certain dialed direct calls in addition to "O" and "LD" traffic. At the customer's request the salesman can arrange to have whatever "charged" dial direct calls diverted that he wishes.

Equipment

A toll diverting trunk is terminated in a trunk jack in the switchboard on the customer's premise.

Central offices must be modified and equipped to handle diversion.

P.B.X. trunk equipment is modified to accept diversion by C.O. equipment.

Consult Engineering coordinates whenever diverting is furnished.

Operation

When diverting equipment is employed—

—Station user dials access code then "O", "211" or other long distance codes used, over a direct dial access trunk

—The call goes through C.O. equipment and back to the P.B.X. attendant

—Appears on the answering jack provided for the toll diverting trunk

—Attendant advises station user to hang up and originate call through attendant by dialing her or "O" without first dialing the trunk access code

The second type of diversion equipment operates identical to the above except—

—Certain dial direct codes can be allowed

—Depends on selection by customer

There is usually a price differential in the two types offered—check your tariff.

EXHIBIT 24.—*Remarks of J. W. Schaefer and J. D. Custy*

CONCLUSIONS

I would like to sum up with a few miscellaneous comments and conclusions about some of the subjects covered this morning. But first, I'd like to take a look with you at a figure (1) which illustrates the development costs in recent years for customer switching. The clear area on the vertical bars shows the costs of the ESS 101 development and the various shaded areas represent the cost of the more conventional PBXs, key systems, and a small amount of private telephone work which was included in the same accounting category. It can be seen that this kind of work has increased in cost by a ratio of 5 to 1 during the last decade.

The amount of PBX work being done at the beginning of the 1960's was largely a holding action and consisted of a little current engineering. Most of the effort was on key systems and private telephone systems. It grew rapidly in the early

'60's and had a minor peak at the time the 800A was being designed. In the last part of the decade, it began to climb at a rapid rate. This chart shows that Western Electric Company has invested a substantial amount of money in customer switching development. It might be considered a bargain from their viewpoint since in 1970 approximately \$60 worth of product will be sold for each development dollar spent. If one were to include the installation and maintenance of this kind of equipment, approximately \$170 is spent for each development dollar. The portion labeled "Western Electric" that existed through 1969, refers to the so-called 53 Account work performed at Kearny and Hawthorne. As you know, when we moved to Denver, this work was reabsorbed into the Laboratories, and there is no such area shown for 1970.

We are entering the era of competition with a lot going for us. We have a tremendous advantage by being a part of the Bell System. Customers naturally turn to Bell for service and will tend to continue to do so even when there are other choices. This is partly out of habit, partly because they like to have a single supplier for their communications needs, and also because we still have a reputation for good service.

On the other hand, we've got some problems we must solve if we are to keep the major part of this market. Most of you were here a month ago when we described how our unstructured procedures in the development process caused excessive development intervals in the data part of our business. These long intervals also beset the PBX development, but it is relatively less important here since PBX development projects tend to be much longer in time due to their complexity.

The development process for PBXs has a different problem. Apparently our current procedure is incapable of determining the Operating Company needs—both the quantity of equipment needed and the service features desired. We are all familiar with Emil Deutsche's charts that so graphically show that forecast needs have consistently fallen far short of the actual orders that materialize. This is so even when these forecasts are made as late as August of the year under consideration.

The mechanism we use to arrive at operating characteristics also is not doing the job. The process now seems to result in the summation of everybody's desires, rather than the hard compromises between features and costs so necessary for a successful product. We are continually, told by our Operating Company contacts that we are building Cadillacs when they want Fords. Some of the companies have demonstrated their convictions by buying other PBXs that have much less capability than we have been given to understand were their actual requirements.

The traffic requirements we design are not for measured usage, but rather a statistical record of the sizes of the systems that have been installed. There is little idea whether there is extra capacity provided or not. Even though the cost of the PBX is very sensitive to its traffic capacity, the tariff structure does not recognize any difference. Even though this is an important parameter in cost, the rigid tariff structure doesn't let the customer benefit from light use. This fact accounts for many of the lost sales we've experienced.

We are now feeling the pain resulting from years of too little design effort on conventional type PBXs. We are now trying to make up for the lost time with rapid development of equipment to fill the gaps in our product line. As you have heard today, we will soon have plugged the major holes as we understand them, i.e., as our procedures for generating requirements have specified the Operating Company needs. But even now, we do not have a program to develop a light traffic machine suitable for the hotel-motel market and other low usage applications. A good many of the sales of foreign machines are just for this purpose.

These and other problems are the reasons that caused the new Customer Products Council to be formed. It is too early to see how effective this new mechanism will be in solving some of the recognized shortcomings in our current procedures.

Another white hope for our salvation is the so-called Denver concept. We are all pinning our faith on its success. Our top management deserves a lot of credit for the decisive manner in which the recommendations of the Tri-Company Committee headed by Morry Tanenbaum were authorized. But what has been done so far is only the beginning. Certainly the Operating Companies have not yet felt any benefit. The toughest part is still ahead. It remains to be seen whether those of us down the line will really implement the approved philosophy. Will the representatives located at Denver really be given the authority to make the concept effective. This is a necessary condition if Denver is to become the customer switch-

ing center of the Bell System. The Chief Engineers of the Operating Companies should look to Denver for its answers in customer switching problems, rather than the many locations that they currently must depend upon for the various kinds of information that they require.

If the concept of Denver is fully consummated in fact, and the Customer Products Council fulfills its potential, we shall be able to satisfy nearly all of the Operating Companies' needs and still enjoy the tremendous advantages of scale and other tangible benefits of being a part of the Bell System.

We have made a good start in solving these problems of customer switching. But now is no time to falter. We need the internal fortitude to lock arms, push ahead and finish the job.

WECO STATUS

J. D. CUSTY.

* * * * *

Let's now examine another element of uncertainty in our planning—non-Bell PBXs. (Vu-Graph 8). Things are just now beginning to come into focus on the competitive picture. We saw these things less sharply last year but they were in the picture even then. We knew that under "Carterfone" our PBX position would be challenged by a variety of American, European and Japanese manufacturers—all quality companies.

We are only now beginning to see the first manifestations of their effort. The challenge comes in two forms: direct interconnection of customer-owned gear and Telco purchases of outside supplier equipment. Let's examine a partial list of U.S. firms which have interconnected. (Vu-Graph 9) From Armstrong Rubber in Connecticut and Mobil Oil in New York to a Holiday Inn in Seattle and Continental Can in California. Through March, a total of about 2900 interconnecting units had been provided by the Bell System, of which over 500 were applied to PBX trunks. AT&T feels that these numbers are very conservative, and we now speculate the interconnection of about 30,000 lines in 1970. The numbers certainly are not significant in themselves, but we feel they sound an obvious warning note—the foot is in the door, and the competition is gearing up.

The interconnection supplier sells to a layman, of course, but we're also aware of systems of sufficient quality to interest many of the Operating Companies. This happens to be a Japanese Electric NA4-09. (Vu-Graph 10). I can assure you it is a quality product, priced significantly lower than our equipment. This and other products will sell to Bell System companies to the tune of over 250 systems this year, based on our own estimates in Denver. The single cabinet shown here provides Series 300 service for 100 lines. It does have a significant traffic limitation and a group of less serious miscellaneous drawbacks, but it has definite appeal in the low traffic market.

This is what we now offer in the same market (Vu-Graph 11). Up to as many as 8 of these 757A cabinets at over twice the price for the same 100-line service. Our planning will meet this challenge, and indeed it must, for if we did not answer this basic question, our final judge—the customer—would answer for us.

Senator HART. We will now hear from the distinguished Senator from Arkansas, Senator McClellan, a member of the subcommittee, for the purpose of introducing the next witness.

The Senator from Arkansas.

Senator McCLELLAN. Thank you very much, Mr. Chairman.

I regret that I cannot stay. Although a member of this subcommittee, I am also chairman of the Appropriations Committee and one of its subcommittees is having an important hearing at this hour, and I feel I must leave and go there. I have heard this witness testify before. I am familiar with much of the information that he will be giving you, and certainly, I am familiar with his background, and I would like to make these remarks for the record.

Mr. Hugh R. Wilbourn, Jr., who is president and chairman of the board of the Allied Telephone Co. of Little Rock, Ark., was elected first vice president of the Independent Telephone Association in Oc-

tober of 1973, and he has been active in the association for many years, having served on its board of directors since 1968 and its executive committee since 1970.

Mr. Chairman, I would like now to depart from this memorandum I have here, more or less a prepared statement, and for the record state that Mr. Wilbourn is a native of Arkansas, and what I could say about him is really truly an American success story. In 1947 he had been with the Bell Telephone Co. for many years, and then he and another party organized a little company and started in contracting work, I believe. He then conceived the idea of getting into the telephone business and he came to the little town of Sheridan, Ark., where I was born, and bought his first exchange. He had 275 telephones plus a toll line from that little town to Pine Bluffs, Ark., the nearest town of any size. Now, that was in 1947. The little exchange had 4 employees at that time, and it had the 275 subscribers.

Today it has nearly 3,000, and from that beginning Mr. Wilbourn and his associates have moved from this one exchange to where they have today 130 exchanges in Arkansas, Missouri, Oklahoma, and Texas, I believe. They now have 1,000 employees. I do not know what he paid for the little company down there, but now they have assets of more than \$100 million and they have not 275 telephones, but 136,000 telephones.

I may say, Mr. Chairman, for the record, that Mr. Wilbourn and his company in the area where he now serves at least have done for rural America in that area, in the communications service, about the same thing that rural electrification has done for rural America in that area in power and electric service. It is truly an American success story.

Mr. Wilbourn attended Wichita Baptist University and began his telephone career with Southwestern Bell Telephone Co. in 1934, spending 10 years in all phases of plant operation. In 1943 he and Mr. Miller formed the company that developed into the Allied Telephone Co., undertaking construction projects and engineering operations for independent telephone companies and Southwestern Bell Telephone Co. until 1958. In 1947 they acquired the Grant County Telephone Co., to which I have referred, with 275 telephones. It now has about 3,000 subscribers. This was the beginning of the present Allied Telephone System. Today they serve more than 136,000 telephones in 6 States.

Mr. Wilbourn, who serves as chairman of the USITA's legislative committee and is a member of the association's communications and political action committee, is a former president of the Arkansas Telephone Association, where he served on the board for 15 years. He is past president of the Organization for the Protection and Advancement of Small Telephone Companies. He is most familiar with the Bell System and our Nation's entire telephone network. He has worked in most phases of telephone operations from climbing poles and stringing wire to running a company with total assets of \$114 million.

He is married to the former Mary Ellen Shaw, has four children and nine grandchildren. His many business commitments do not prevent him from taking a keen interest in the National Council of the

Boy Scouts of America, where he served on the board of trustees, and the Public Baptist Church, where he has been a member of the board of deacons for the last 19 years.

Mr. Chairman, the U.S. Independent Telephone Association represents 95 percent of the more than 23 million telephones served by the 1,760 independent telephone companies throughout the country. The people of Arkansas, Mr. Chairman, are proud of the achievements of this small business and particularly the contribution that it has made through the leadership and the direction of Mr. Wilbourn and his associates and the contribution it has made to the progress of our State.

I thank you for hearing him. I regret I cannot remain, but as I said to you, I am fully familiar with what his testimony will be, and of course I will see it in the record. I trust and I know this committee will, in considering the legislation before it and other matters within its jurisdiction and responsibility, give due weight to Mr. Wilbourn's testimony.

Thank you very much, Mr. Chairman. I regret I must go.

Senator HART. I regret both you and Senator Hruska have to go. I can understand why even the chairman of the Appropriations Committee would fight to find the time to introduce a constituent whose story is as exciting as that one.

Thank you.

Senator McCLELLAN. Thank you very much.

Senator HART. Mr. Wilbourn, you may proceed.

STATEMENT OF HUGH R. WILBOURN, JR., FIRST VICE PRESIDENT, U.S. INDEPENDENT TELEPHONE ASSOCIATION, CHAIRMAN OF THE BOARD, ALLIED TELEPHONE CO., ACCOMPANIED BY WILLIAM C. MOTT, EXECUTIVE VICE PRESIDENT, U.S. INDEPENDENT TELEPHONE ASSOCIATION

Mr. WILBOURN. Thank you, Mr. Chairman.

I would like for the record to also thank Senator McClellan for taking his busy time in coming down.

Mr. Chairman, I would like to introduce for the record Adm. William C. Mott, who is the executive vice president of the U.S. Independent Telephone Association.

Senator HART. Mr. Mott.

Mr. WILBOURN. I do not suppose you have had any witness before this committee with more experience in Bell System monopoly watching or anyone who could match the long history of antitrust surveillance which those I represent, living and dead, have spotlighted on the business methods of A.T. & T. Any witnesses who have thus far appeared before you are Johnny-come-latelies when it comes to banding together to do battle with any tendency of the Bell System to monopolize, to restrain trade, or to do anything which, in our opinion, infringes on the rights of the independent telephone industry. We have been in this watchful posture for 77 years. Indeed, our association was formed to prevent Bell from acquiring a complete monopoly over the telephone business in this

country which it was trying mightily to achieve. We do not intend to relax our vigilance to prevent monopolistic practices of the Bell System now, or in the future.

With that for openers, with the added fillip that my own company has hauled one of the Bell companies and its parent into Federal court for what we believed to be a transgression against our right to operate our business in a certain way, let me tell you who I am and whom I represent.

[Mr. Wilbourn's prepared statement appears as exhibit 1.]

Mr. WILBOURN. My name is Hugh R. Wilbourn, Jr., of Little Rock, Ark. I am president and chairman of the board of Allied Telephone Co. and I am first vice president of the U.S. Independent Telephone Association.

For purposes of brevity, in this late afternoon, I will omit reading background information on both of these organizations, along with some other parts of the prepared statement which you have before you.

I should mention that the independent industry consists of some 1,700 non-Bell operating telephone companies serving more than 25 million phones—one out of every six in the country. In the Nation, we serve slightly more than 50 percent of all service areas, a point that might be more meaningful to you, Mr. Chairman, if you would glance at the two maps—one of my native State of Arkansas, and the other of your State of Michigan.

Turning first to my State, you will note that the independent, or non-Bell, companies serve about two-thirds of the geographic area of the State. Bell is represented by the shaded area, and the independents are in black. Historically, the Bell System developed the big cities of America—in your State, cities such as Detroit, and in mine, Little Rock—leaving the countryside to the independents. That is why we independents serve two-thirds of the State of Arkansas and 50 percent of the State of Michigan.

It is important to note, Mr. Chairman, that the Congress of the United States had and still has a big hand in bringing good telephone service to the rural people of America. Back in 1949 the Congress decided that farmers and other rural people were entitled to good telephone service at reasonable rates. You gentlemen or your forebears passed the telephone amendment to the Rural Electrification Act which, by providing very low interest loans, in effect subsidized telephone rates in the countryside.

Naturally, any action on the part of anyone, and that includes this committee, which would defeat the intent of the Congress in bringing telephone service at reasonable rates to the rural areas of this country would, and should, be vigorously opposed by companies which serve those areas and by the people served. Some of the actions this subcommittee might contemplate would make it more difficult to serve the rural areas of America, and we hope to be able to demonstrate why that is so.

Mr. Chairman, let me be quite frank in stating that while we are sometimes suspicious of Bell motives, we are arm's-length partners with the Bell System in providing what most objective observers rate as the best telephone service in the world. Naturally, the eco-

conomic health of all partners in a joint enterprise—even though they deal at arm's length—is mutually interdependent. For example, roughly 50 percent of the revenue of our independent industry comes from toll revenues generated jointly with Bell.

May I stop just a moment from the prepared speech and look to the Michigan map. I am sure, Mr. Chairman, that somewhere up there you know two towns that are very small; and the toll route between those towns might only require 8 or 10 circuits, while the toll route between here and New York requires thousands of circuits. Yet, the calling rate for the toll service is figured on averaging, and therefore the rate for the two small towns basically will be the same as it would be between two large towns of the same distance—taking in mind that the intrastate and interstate rates are regulated differently.

Senator HART. As long as you left the testimony there for a minute, let me find out something about this Michigan map.

I see in your map of Arkansas phone service, every county either has independent or Bell service. In Michigan—and I hope I am misreading the map—it would look as though there are about a dozen counties that do not have any service.

What is the white?

Mr. WILBOURN. I am going to suggest now that they are unallocated territory. I do not know about Michigan, Admiral?

Mr. MOTT. That is a Michigan Public Service Commission map, sir; and on that map it shows that they are unassigned. I do not know whether that means that they might be co-ops, and therefore unregulated, or whether it is territory that just has not been assigned. But we will be glad to provide an explanation for the record of those white splotches in the Michigan map.

Mr. CHUMBRIS. I was worried about that, myself, when I saw it yesterday.

Mr. WILBOURN. Now, in explanation of the Arkansas map, if I may say, I should say that Bell got credit for all of the unallocated territory and it has shown up as shaded. There is a lot of that territory that really should have been unallocated, which makes it look like Bell is about equal, really, to the independents.

Senator HART. As long as we are at this interruption, let us take a brief recess. That is a signal for a live quorum, which will precede a rollcall vote; after which I shall return.

Mr. WILBOURN. All right, sir.

[A brief recess was taken.]

Senator HART. The committee will be in order.

If Mr. Wilbourn will resume.

Mr. WILBOURN. Mr. Chairman, I did find out that the white is unallocated territory in Michigan.

Senator HART. Unallocated?

Mr. WILBOURN. Unallocated, right; and on the Arkansas map there was none shown.

Senator HART. But all given to Bell?

Mr. WILBOURN. It was all given to Bell, accidentally, I assure you. It really has not been given to them, but it is shown on there as belonging to them.

Mr. CHUMBRIS. Mr. Chairman, while we are on this point, I understand that about 20 percent of the area of the United States is unallocated; so it is not just Michigan.

Senator HART. What does that mean?

Mr. MOTT. Unfranchised is the technical term to describe it. Of course there is a lot of area in this country, Mr. Chairman, that is inhabited only by jackrabbits and roadrunners. There just is not anybody there.

Senator HART. You are not looking at that Michigan map, are you?

[General laughter.]

Mr. MOTT. Oh, no, sir; but you know, there were a lot of lumber barons who came up there and cut down all of the trees and left nothing but slash. I am sure if you had been in the Senate that would not have happened.

Senator HART. I do not know how to respond to this very sensitive question so I will not say anything.

Mr. WILBOURN. I would like to repeat the statements that, for example, roughly 50 percent of the revenue of our independent industry comes from toll revenues generated jointly with Bell. And of course, all of the companies join Bell all over the Nation.

Obviously any reduction in our toll revenues as a result of the shrinkage of the total Bell-independent toll pot would have a serious effect on the ability of our companies to render adequate local service without raising residential rates. We see such an adverse result flowing from the artificially contrived competition introduced by the Federal Communications Commission into private line intercity competition, the so-called specialized common carriers. If toll revenues decline residential rates must go up. It's as simple as the seesaw, a fact which some economic theorists and Federal regulators seem unable to grasp.

For instance, at Shenandoah Telephone Co., because of a heavy construction budget to serve a rapidly expanding area, the management in 1973 thought it would have to request the Virginia State Corporation Commission for an increase in local residential rates. It is the only place a company like Shenandoah can turn when it needs more money to finance its service and construction needs. There is no other way it can increase revenues, as it has no control over toll rates or revenue.

Fortunately for its subscribers, no local rate increase was needed in 1973, and none seems likely in 1974. The reason is a \$100,000 increase in toll revenues for Shenandoah as a result of study and negotiations undertaken by the U.S. Independent Telephone Association with the A.T. & T., the Bell System parent. The total amount of increase agreed upon for our so-called average settlement companies, of which Shenandoah is one, was \$35 million. Just to think about negotiating toll settlements with 25 Bell companies, not to mention Long Lines and other communications entities, boggles the mind. In fact, for the 1,700 independent companies you would be creating a chamber of negotiating horrors.

There you have it, the effect of loss of toll revenue should be no mystery to anyone. Nor should the loss of revenue which results from

the incursion of entrepreneurs who sell terminal equipment to business subscribers, another form of competition introduced by the *Carterfone* decision of the Federal Communications Commission.

In neither one of these decisions of the FCC, in the case of specialized common carriers or in the case of terminal equipment, *Carterfone*, did the Commission make any kind of economic impact study. Legislation, Senate bill 3580 has now been introduced by Senator Magnuson and referred to the Committee on Commerce which would require a statement of economic impact whenever it appeared that any decision of the FCC would have the effect of raising local telephone rates.

Mr. Chairman, you see the heart of our complaint is that the businesses which buy interconnection equipment and those hardware merchants who sell it to them have no interest in the residential subscriber and no obligation to serve him. The same goes for the specialized common carriers. They do not really care what happens to the residential subscriber's rates. So it's big business these decisions favor, not the little guy or the little old lady in tennis shoes.

Make no mistake about it, Mr. Chairman, interconnection of terminal equipment into the telephone business with the resultant loss of revenue to the telephone company will inevitably and inexorably raise residential rates. So will loss of revenue from the Bell-independent toll pot as a result of the introduction of specialized common carriers. That's a flat statement, but we see no other alternative. Our association has embarked on extensive economic impact studies to demonstrate the unhappy facts.

Why do you suppose the National Association of Regulatory Utility Commissioners is so concerned about the economic impact of competition as presently authorized? This organization represents the State commissions, which are a lot closer to the people than Federal regulators or Federal economic theorists.

Ben Wiggins, chairman of the Georgia Public Service Commission as well as the president of the National Association of Regulatory Utility Commissioners, pointed out last month that the State regulators of America for some time now have been concerned that these new federally sponsored competitive policies will result in sharply increased costs for domestic telephone service. He added that the States are concerned that the other side of this coin would be lower costs and higher profits for the businesses and affluent users of the nationwide telecommunications network.

Said Mr. Wiggins:

In short we fear that the average consumer may end up paying much higher home telephone bills in order that business users may make higher profits.

I would like to answer the three specific questions being investigated by this committee: Should the Bell System be broken up? Should the Federal Government create new competition in the telecommunications business; and finally are we competing fairly in the terminal equipment market?

The independent telephone industry's answer to the first two questions is a flat but reasoned "No." Our answer to the third question is that Bell and independent companies are competing fairly but in

earnest, and this is what the hardware merchants object to. We believe they want their Federal Government to create and foster artificial competition. While we do not believe competition is in the public interest, as long as we must compete we will compete in fact and not just in name.

We are convinced that no segment of our society would benefit from the proposal to hack the Bell System to pieces with a legislative sword. From an economic viewpoint this proposal is as traumatic as was King Solomon's crafty proposal that an infant of disputed parentage be cut in twain in the interests of justice.

Mr. Chairman, let me emphasize that the success of the Bell System, and the quite parallel success of the independent operating telephone companies, is a success of our unique system of private enterprise joined with public regulation.

The regulated monopoly telephone industry has done a better job for the public than most firms in the open competitive market. While the cost of all goods and services in this country soared 50 percent in the years between 1960 and 1973 the cost of local telephone service went up only 24 percent, and the cost of long-distance service stayed practically the same.

With this record of success why does the telephone industry face the threat of a breakup at the behest of this committee and a band of business firms with sales charts in their eyes?

Actually, I cannot believe that the purposes of this inquiry have any support from the American public. As a resident of Little Rock, out in the heartland of our country, it seems strange to me that at a most crucial time in our history, congressional committees should be considering breaking up the one great system of public service which is universally acclaimed as the most successful private business in the world, by all, that is, except a few who want a protected piece of the action.

I think the burden of proof is on anyone who wants to make basic changes in our communications industry to show that such changes actually would benefit the public.

The economic consequences of breaking up the Bell System would be so great that they are difficult to analyze. However, even a simple review shows great economic damage and injustice.

No benefit to the customers of the Bell companies can be shown as a result of restructuring, but there would be a threat of lowered service standards and higher rates.

For the independent companies, the breakup of the Bell complex would add greatly to the complexity of settlement agreements on long-distance revenues and other areas in which working arrangements must be agreed upon. We oppose any such action as detrimental to our stockholders and our customers.

Divestiture of Western Electric would create tremendous problems for the many independent manufacturers of telephone equipment which serve the independent telephone companies. As a general rule, independent telephone companies cannot purchase equipment from Western Electric, but with the divestiture Western Electric, with its economies of scale, could become a formidable competitor for the smaller manufacturers. In such a situation many of the smaller sup-

pliers would be driven out of business. Thus, breaking up the Bell System would start a whole chain of economic impacts, all of which should be taken into account by this committee.

This committee also is reviewing the advisability of fostering competition in the form of sale of terminal equipment and offering of private-line intercity service.

Our independent companies and our customers will suffer if the use of customer provided telephone equipment becomes widespread. The reason is simple. To achieve the social goal of universal service the telephone companies always have averaged their rates so that customers within a given exchange area pay the same rate, regardless of the population density of their particular area. This practice has helped make it possible to bring the benefits of modern communications to our rural areas.

Also, we have used a value of service concept under which business firms paid more because the service had a commercial value for them. In effect, business service has subsidized residential customers, helping to make possible the low-cost universal service praised before this committee by Tom Whitehead of the Office of Telecommunications Policy. Other nations such as Great Britain have the same kind of subsidization.

The more we compete with the unregulated hardware merchants for the equipment needs of business firms the more we must shift to the cost-related pricing of our services. Inevitably we believe this means higher prices for the homeowners, the small business firm, the poor, and the elderly.

The courts already have challenged the offhand assumption by the Federal Communications Commission that competition in the telephone industry automatically and per se benefits the public. In a landmark decision last May the U.S. Court of Appeals for the District of Columbia remanded a case to the FCC with specific instructions that it must prove the benefit.

The final point being considered by your committee is the issue of so-called dirty tricks supposedly employed by the telephone companies against the interconnect suppliers. It seems to me that your committee's diligent search for such tricks has turned up little insofar as the record shows except a few complaints that Bell has shown business purchase preferences to companies which do business with Bell rather than to companies which do not do business with Bell.

This concludes my discussion of the issues raised by this committee. I would like to add only that the telephone industry is completely confident that its historic and present position is in the public interest.

We are convinced that the Federal Communications Commission has not yet developed sufficient facts to be a competent judge of the true interests of the public. We believe that the ultimate solution of the controversy must be made in Congress through the comprehensive study of our national telecommunications needs and the formulation of a national telecommunications policy.

I thank you for your courtesy in hearing me today.

Senator HART. In the introduction by Senator McClellan and again in your prepared testimony, I think all of us were struck by

the solid growth which you achieved in a relatively very few years. I am speaking now of your company, not the association.

Out of curiosity more, I suppose, than relevance to the bill, how was that achieved?

Mr. WILBOURN. By working 100 hours a week.

Senator HART. Well—

Mr. WILBOURN. It has just been a fantastic thing, Senator. We did put in lots of hours.

Senator HART. Oh, I have no doubt.

Mr. WILBOURN. But the economy in our area in Arkansas was good to us. Arkansas has been growing during the last few years. The number of telephones in Arkansas per 100 figure was maybe 25 back in the early days, and today it is getting up into the national average. The national average, I believe, that was used today was something like 95 telephones per 100 people. And so Arkansas has been growing during this period, and we were able to acquire some of the neighboring smaller independents. Of course, we were about as small as you could be. But we were able to acquire some others and eventually the people that we did contract work for through the early years of our business, who were ready to sell due to either age or taxes or for whatever reason, called us and we were able to go back and negotiate a purchase, particularly in Arkansas.

Senator HART. Would acquisition of your company by the Bell System make good sense?

Mr. WILBOURN. Oh, no, sir.

Senator HART. Why not?

Mr. WILBOURN. Well, if you are looking to acquisition by all companies by the Bell System, my answer is a flat "No." My company is not for sale. It is a business; it is a good business; it has been good to us; and we think we are doing a good job serving the people in the areas that we serve.

Senator HART. Mr. O'Leary?

Mr. O'LEARY. Do you think you do as good a job as the Bell System?

Mr. WILBOURN. I will say that in some areas we probably do a better job than the Bell System, and they probably do a better job than we in some areas. I think it really depends on the growth pattern in a particular area and what is going on in that area.

We have service problems, and then we go in and correct them; and they have service problems and they go in and correct them. It is a never-ending thing to furnish good service.

Mr. O'LEARY. Does your company manufacture its own equipment?

Mr. WILBOURN. No, sir.

Mr. O'LEARY. And from how many different suppliers do you purchase equipment?

Mr. WILBOURN. Well, for all types of equipment, probably from 30 or 40 suppliers. Switching gear we purchase from Stromberg-Carlson, Northern Electric, North Electric, I.T. & T.; anybody that makes it, we buy it. So we use some from everybody.

Mr. O'LEARY. And you are satisfied with the quality of that equipment?

Mr. WILBOURN. Oh, yes, sir.

Mr. O'LEARY. Interconnect companies sell equipment made by those same manufacturers; do they not?

Mr. WILBOURN. Yes, sir.

Mr. O'LEARY. And when you utilize that equipment in your system you are not required to install a protective device.

Mr. WILBOURN. That is correct.

Mr. O'LEARY. Does it not seem somewhat unfair that if a customer purchases the very same equipment, say I.T. & T. equipment or Stromberg-Carlson equipment, that he is required to interpose an interface device in order to protect the network?

Mr. WILBOURN. If it were not attached to the network it would not make any difference. But when you attach something to the network, then somebody has got to assume the responsibility of maintaining that network, and when you let everybody hook on, you are passing that responsibility to everyone and not the telephone company, and we would not allow that under any condition, unless it were imposed on us.

Mr. HELLERMAN. Mr. Wilbourn, would you explain what happens when you are involved in separation discussions on toll revenue division with Bell and you do not agree with the dollar amount that you think you are entitled to?

Mr. WILBOURN. Well, of course, the basic negotiations for the independent industry are done between the U.S. Independent Telephone Association and A.T. & T., and then there is a basic agreement reached, and then the various Bell companies negotiate the minor differences, so to speak, with the companies.

Mr. MOTT. Our agreement with the Bell System is advisory only. It is not binding on any one of our members, and in point of fact, Mr. Hellerman, some of our members have not been satisfied with the agreement, have not been satisfied with what they could negotiate with the local Bell System, and have canceled the contracts and taken the case to court. This has happened many times in the independent industry around the country. They just say, "No; we are not satisfied, we do not think we are getting what we should be getting," and they withhold the toll and hold it in escrow and take the Bell System to court.

Mr. HELLERMAN. Who puts the money in escrow?

Mr. MOTT. The independent company. They collect the toll.

Mr. HELLERMAN. What is the amount of the USITA annual budget?

Mr. MOTT. About \$2 million.

Mr. HELLERMAN. Referring to a speech which was made by Weldon W. Case, president of USITA, it indicates that half of USITA's advertising budget is going to be used in direct support of telephone companies' efforts to compete with interconnect suppliers.

What does that mean?

Mr. MOTT. Well, it just simply means that we want to awaken our people to the competition that is coming down their way, and we want to awaken the public to it. I would be glad to make copies of all of those advertisements available for the record. I do not think

you will find anything in them that in any way violates the anti-trust laws or is discriminatory.

Mr. HELLERMAN. I am looking at an article from Telephony magazine, April 8, I believe, of this year. It quotes Jim Naylor, "Let's stamp out interconnect," and statements to that effect.

Mr. MOTT. I am sorry that Jim Naylor is not here today to defend himself. He is lecturing at Michigan State University today to one of the seminars that is held in that great institution.

But his response to that was simply that it did not represent the full text of the statement. When I asked him about it he said that the full text of the statement was something like this: That if this effort to inject competition into traditionally regulated monopoly markets is not in the public interest, then let us stamp out interconnect—which is far different from the way it was reported.

As you know, news people are apt to report things in a truncated fashion. Since I sat down here, I read the account in the Evening Star tonight as to what our witness had said, and so on and so forth. But of course, the evening Star reporter departed these premises at 11 o'clock this morning. So it is a little difficult to tell how the news will report any given statement. Mr. Naylor denies that he made that flat statement.

Mr. HELLERMAN. Mr. Wilbourn, how concerned are you with the impact of competition on your Allied Telephone Co?

Mr. WILBOURN. That is why I am here today, because I am concerned that the impact eventually will reach the small companies. Basically, it has not reached them yet. But it will reach them if it continues as it is now.

Mr. HELLERMAN. Do you think if it does reach you it will have an adverse impact on your earnings per share?

Mr. WILBOURN. Yes, sir; I certainly do. I think it will have more impact on the raising of rates to our residential and our rural subscribers.

Mr. HELLERMAN. Do you also believe, though, that there will be a lessening of your capital requirements if your customers start acquiring their own terminal equipment?

Mr. WILBOURN. Well, even if there was, we are earning on those capital requirements today and those earnings are a part of our below-the-line figure, and I certainly do not want to give up any of them, because that is what helps make this company healthy.

Mr. HELLERMAN. In the A.T. & T. 1973 Annual Report to Shareholders, Mr. deButts used approximately one-half of his letter to shareholders discussing competition, and I think that letter went well over 10 pages. In looking over your 1973 annual report I do not notice any reference or concern for anticipated problems as a result of the *Carterfone* decision, or competition, or specialized common carriers.

Would you care to comment?

Mr. WILBOURN. That is correct, because up to now that has not affected us. And again, the reason I am here is that I do not want it to affect us. And we are going to do everything we can to carry out the policies, really, that we have established in the USITA, and that is to attempt to contain it to the point that we can live with.

Mr. HELLERMAN. When was the last time your company sold securities to the public?

Mr. WILBOURN. I believe 2 years ago.

Mr. HELLERMAN. Was there any discussion in that prospectus about competition or the impact it might have?

Mr. WILBOURN. No. We have had, as I recall, I am sure, discussions with people about the eventual effect. But it has never been an issue.

Mr. HELLERMAN. I would assume that since, as you recall, it was not disclosed in the prospectus that it was not, at least at that time, considered a material concern?

Mr. WILBOURN. No, sir. This is probably correct.

Mr. HELLERMAN. Do you have any feeling or opinion as to the operational aspects of the couplers that are required to be used to interface customer-owned equipment in the network, whether they degrade the service, whether they cause problems?

Mr. WILBOURN. We have only two interconnected pieces of equipment that I am familiar with, and as far as I know we are having no problems with the interconnected devices.

Mr. HELLERMAN. I am looking at an article from Telephone Engineer and Management, dated December 15, 1973, by John L. Wilson, general manager of Business Telephone Systems, Inc., of Columbus, Ohio, which is a wholly owned subsidiary of an independent telephone company. And he states in one part, talking about the coupler, that it is just one more device which causes more problems than any possible harm it can prevent.

Do you have any comment on that?

Mr. WILBOURN. No, I have no comment on that.

Mr. HELLERMAN. I have no further questions, Mr. Wilbourn.

Thank you very much, Mr. Chairman.

Senator HART. Mr. Chumbris.

Mr. CHUMBRIS. Thank you, Mr. Chairman.

Mr. Hellerman was asking you about the concern of your company. You are the vice president of USITA, are you not?

Mr. WILBOURN. Yes, sir.

Mr. CHUMBRIS. And you have just put testimony in the record, I think, in answer to the question that you are spending \$150,000 a year in advertising to alert the people to the dangers of the interconnect and some of the decisions of the FCC.

So therefore, your association is showing its concern about the turn in that direction; is that so?

Mr. WILBOURN. That is correct.

Mr. MOTT. I might also add, we never go before a meeting of the Society of Security Analysts in New York without having the question of the impact of interconnection raised with our principal witness, who next year will be Mr. Wilbourn. And I guarantee you when he goes before the Society of Security Analysts in New York the question will be brought up for the whole industry, concerning the impact of interconnection on our revenue.

Mr. CHUMBRIS. North Electric is the manufacturing arm of the independents; is that correct?

Mr. WILBOURN. It is one of the manufacturers; yes, sir.

Mr. CHUMBRIS. Now, I visited North Electric in Tennessee, in the northeastern corner of Tennessee, and I really was amazed at the plant which you have down there. It is far greater than my expectations that I had gathered from the previous hearings. I went down there; it is just a fantastic plant. The material that you put out; the workers have such a great interest in the plant; also the community itself; and I understand it is the second largest employer in that whole section of Tennessee. Am I correct in that?

Mr. WILBOURN. Yes.

Mr. CHUMBRIS. Now, it is my understanding that that plant is in some way owned by some of the independents; is that the way it operates?

Mr. MOTT. It is a subsidiary; it is owned by United Telecommunications, which is the second largest independent company in America—comprising roughly, I guess, 10 percent of our independent telephones; almost 3 million telephones. Their main plant is in Galion, Ohio.

Mr. CHUMBRIS. Yes, I understand.

Mr. MOTT. I am familiar with the one in Tennessee, and so, may I add, is Senator Baker, who has also been through it a number of times.

And it is a very large manufacturing establishment.

Mr. CHUMBRIS. And also Senator Brock. They are very proud of it. As a matter of fact, when I was in North Carolina I visited Western Electric's plant in Greensboro; and I visited Northern Electric, which is part of Canada Bell, which is just north of Raleigh and Durham, N.C. So, we were able to visit three different plants in the North Carolina and Tennessee areas.

Mr. MOTT. They are also members of our association; Northern Electric.

Mr. CHUMBRIS. Well, thank you very much. I appreciate very much your testimony. I think that you have stated your point very well as to what would happen if the system would be changed from what it is today.

Mr. WILBOURN. May I make one short statement?

Senator HART. Certainly.

Mr. WILBOURN. There are only 153 cities in America, in the States, over 100,000. There are 18,000 communities like we serve. And the Bell serves a lot of the small ones, too. And the communications industry, as we know it today, is not New York and Chicago and Miami, but it is these 18,000 little towns all over the country. And it is the rates in those towns and in those rural areas that we really are here testifying about today, that we are concerned about. And those rates of the rural people and the residential people are the ones that we are trying to be the watchdog of, because they are really the guts of our business—not necessarily the Bell's, but of our business.

Senator HART. Let me throw this last one at you. You described your own experience, including the fact that you sued the Bell company and its parent. Tell us about the lawsuit. You sued Bell and its parent in the Federal Court for "what we believed to be a transgression against our right to operate our business." What was that lawsuit all about?

Mr. WILBOURN. A number of years ago I came up with an invention that would place long distance calls without the use of an operator; and the name of the system, as it was called and patented, was the "Telefast System." And we visited with both A.T. & T. and Southwestern Bell, and then proceeded to install and test the equipment. And the local Bell company decided it was not in the public interest and they took us to court. And the Public Service Commission issued a rather split decision. They said that we could test it on intrastate, but we could not test it on the interstate. And so we proceeded to test it on the intrastate lines. And the local Bell people again decided that they would not allow this, and so we took them to Federal court, and later settled. And we were happy with the settlement.

And the patent is still in effect, and is still intact. And maybe some day we will try it again.

Senator HART. Did the settlement include your right to use it?

Mr. WILBOURN. No, sir; no, sir. We withdrew it in connection with the settlement.

Senator HART. Is the American consumer better off or worse off?

Mr. WILBOURN. Well, we do not know; we really do not know.

Senator HART. Are there any further questions?

[No response.]

Senator HART. Thank you very much.

Mr. WILBOURN. Yes, sir.

Senator HART. We will adjourn, to resume tomorrow morning, in this room, at 10 o'clock.

[Whereupon, at 5:20 p.m., the subcommittee adjourned, to reconvene at 10 a.m. Wednesday, July 31, 1974, in room 6202, Dirksen Senate Office Building.]

[The following was received for the record. Testimony resumes on p. 4317.]

MATERIAL RELATING TO THE TESTIMONY OF HUGH R. WILBOURN, JR.

EXHIBIT 1.—Prepared Statement of Mr. Wilbourn

PREPARED STATEMENT OF HUGH R. WILBOURN, JR., FIRST VICE PRESIDENT, U.S. INDEPENDENT TELEPHONE ASSOCIATION, AND CHAIRMAN OF THE BOARD, ALLIED TELEPHONE CO.

I don't suppose you have had any witness before this committee with more experience in Bell System "monopoly watching" or anyone who could match the long history of antitrust surveillance which those I represent—living and dead—have spotlighted on the business methods of AT&T. Any witnesses who have thus far appeared before you are Johnny-Come-Latelies when it comes to banding together to do battle with *any* tendency of the Bell System to monopolize—to restrain trade—or to do anything, which in our opinion, infringes on the rights of the Independent telephone industry. We've been in this watchful posture for seventy-seven years. Indeed, our Association was formed to prevent Bell from acquiring a complete monopoly over the telephone business in this country, which it was trying mightily to achieve. We don't intend to relax our vigilance to prevent monopolistic practices of the Bell System now, or in the future.

With that for openers, with the added fillip that my own company has haled one of the Bell companies and its parent into Federal Court for what we believed to be a transgression against our right to operate our business in a certain way, let me tell you who I am and whom I represent.

My name is Hugh R. Wilbourn, Jr., of Little Rock, Arkansas. I am Presi-

dent and Chairman of the Board of Allied Telephone Company, a system company directing the operation of 12 telephone companies in six South Central states with a total of about 130,000 telephones, a total plant investment of more than \$83 million, and annual operating revenues of almost \$20 million. Typically these companies are relatively small and operate almost exclusively in rural areas and small towns.

In addition, I am First Vice President of the United States Independent Telephone Association, a Washington-based national trade association representing the interests of the 1,700 Independent—or non-Bell—operating telephone companies serving more than 25 million telephones in 48 states—primarily in the rural areas and small towns. Each of these non-Bell telephone companies operates in the same basic manner as the Bell companies—that is, as a regulated monopoly serving a designated area under the jurisdiction of a state regulatory commission. The Independent companies serve about one out of six telephones in the country and have a total plant investment of more than \$18 billion.

These statistics I've rattled off might be more meaningful to you, Mr. Chairman, if you'd glance at these two maps—one of my native state of Arkansas and the other of your state of Michigan.

Turning first to my state, you'll note that Independent—or non-Bell—companies serve about two-thirds of the geographic area of the state. Bell is represented by the shaded area and the Independents are in black. Historically the Bell System developed the big cities of America—in your state, cities such as Detroit and in mine, Little Rock—leaving the countryside to the Independents. That's why we Independents serve two-thirds of the state of Arkansas and 50 per cent of the state of Michigan.

It's important to note, Mr. Chairman, that the Congress of the United States had and still has a big hand in bringing good telephone service to the rural people of America. Back in 1949 the Congress decided that farmers and other rural people were entitled to good telephone service at *reasonable rates*. You gentlemen or your forbears passed the Telephone Amendment to the Rural Electrification Act which, by providing very low interest loans, in effect, subsidized telephone rates in the countryside.

Naturally, any action on the part of anyone, and that includes this Committee, which would defeat the intent of the Congress in bringing telephone service at reasonable rates to the rural areas of this country would, and should, be vigorously opposed by companies which serve those areas and by the people served. Some of the actions this Subcommittee might contemplate would make it more difficult to serve the rural areas of America and we hope to be able to demonstrate why that is so.

As I understand it, this series of committee hearings is considering three questions.

First, should the major component parts of the AT&T be severed into separate operating entities?

Second, should the government create a competition in the telecommunications industry by changing the system of regulated monopoly which existed until 1968?

Third, is the Bell System—and by implication, the Independent telephone industry—competing fairly in the market for terminal telephone equipment?

Before I answer these questions, let me be quite frank in stating that while we are sometimes suspicious of Bell motives, we are arms-length partners with the Bell System in providing what most objective observers rate as the best telephone service in the world. Naturally, the economic health of all partners in a joint enterprise (even though they deal at arms length) is mutually interdependent. For example, roughly 50 per cent of the revenue of our Independent industry comes from toll revenues generated jointly with Bell.

Obviously, any reduction of our toll revenues as a result of the shrinkage of the total Bell-Independent toll pot would have a serious effect on the ability of our companies to render adequate local service, without raising residential rates. We see such an adverse result flowing from the artificially contrived competition introduced by the Federal Communications Commission into private line intercity competition—the so-called specialized common carriers. If toll revenue declines—residential rates must go up—it's as simple as the saw—a fact which some economic theorists and Federal regulators seem unable to grasp.

For instance, one of USITA's member companies is the Shenandoah Telephone Company in the predominantly rural area of the Shenandoah Valley of Virginia, famed in song and story. It serves some fourteen thousand customers, and in the year 1973 had revenues of approximately one and three quarter million dollars. Slightly more than half of this revenue comes from toll.

Because of a heavy construction budget to serve a rapidly expanding area, the management in 1973 thought it would have to request the Virginia State Corporation Commission for an increase in local residential rates. It's the only place a company like Shenandoah can turn when it needs more money to finance its service and construction needs. There is no other way it can increase revenues, as it has no control over toll rates or revenue.

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Fortunately for its subscribers, no local rate increase was needed in 1973, and none seems likely in 1974. The reason is stated succinctly in the company's 1973 Annual Report.

"During 1973 it appeared it would be necessary for us to ask for increased rates. . . . In January of this year, a new settlement agreement has been announced between the Bell System and the independent telephone companies in the United States. This increase is estimated to produce \$100,000 of additional revenue for Shenandoah Telephone Company, which is 11.5% of our toll revenue. It is possible that this settlement may enable us to postpone any increase in rates in 1974."

Shenandoah's one hundred thousand dollar increase in toll revenue came about as a result of study and negotiations undertaken by the United States Independent Telephone Association with the AT&T, the Bell System parent. The total amount of increase agreed upon for our so-called "average settlement companies," of which Shenandoah is one, was 35 million dollars. Just to think about negotiating toll settlements with 25 Bell companies, not to mention Long Lines and other communications entities, boggles the mind. In fact, for the 1,700 Independent companies you would be creating a Chamber of Negotiating Horrors.

There you have it—the effect of loss of toll revenue should be no mystery to anyone. Nor should the loss of revenue which results from the incursion of entrepreneurs who sell terminal equipment to business subscribers—another form of competition introduced by the Carterfone decision of the Federal Communications Commission.

In neither one of these decisions of the FCC—in the case of specialized common carriers or in the case of terminal equipment (Carterfone)—did the Commission make any kind of economic impact study. Legislation (S.3580) has now been introduced by Senator Magnuson and referred to the Committee on Commerce which would *require* a statement of economic impact whenever it appeared that any decision of the FCC would have the effect of raising local telephone rates.

Senator Magnuson's bill would also require, within two years of passage, economic impact studies of past decisions of the FCC whose continuation might have significant impact on local rates. While we look on this provision as somewhat like locking the barn after the FCC has stolen the horse, it wouldn't do any harm to demonstrate how the great robbery took place. It might make the Commission more considerate of the average subscriber in the future and conversely not so solicitous of the welfare of a few large businesses—which, like the Commission, seem to have no interest in local rates.

You see, Mr. Chairman, the heart of our complaint is that the businesses which buy interconnection equipment and those hardware merchants who sell it to them have no interest in the residential subscriber and no obligation to serve him. The same goes for the specialized common carriers. They don't really care what happens to the residential subscriber's rates. So it's big business these decisions favor, not the little guy or the little old lady in tennis shoes.

Make no mistake about it, Mr. Chairman, interconnection of terminal equipment into the telephone business with the resultant loss of revenue to the telephone company will inevitably and inexorably raise residential rates. So will loss of revenue from the Bell-Independent toll pot as a result of the introduction of specialized common carriers. That's a flat statement, but we see no other alternative. Our Association has embarked on extensive economic impact

studies to demonstrate the unhappy facts. These expensive economic impact studies might have been unnecessary if the FCC had done its proper job, or if the aforementioned provisions of Senator Magnuson's bill had been in the statute books.

Why do you suppose the National Association of Regulatory Utility Commissioners is so concerned about the economic impact of competition as presently authorized? This organization represents the State Commissions—which are a lot closer to the people than Federal regulators or Federal economic theorists.

Ben Wiggins, Chairman of the Georgia Public Service Commission as well as President of the National Association of Regulatory Utility Commissioners, pointed out last month that the State Regulators of America for some time now have been concerned that these new Federally sponsored competitive policies will result in sharply increased costs for domestic telephone service. He added that the States are concerned that the other side of this coin would be lower costs and higher profits for business and affluent users of the nationwide telecommunications network.

Said Mr. Wiggins: "In short we fear that the average consumer may end up paying much higher home telephone bills in order that business users may make higher profits."

Mr. Wiggins stated in a letter to Congressman Roush of Indiana that the men and women of the regulatory community of America have worked for many years to build a communications network that was both efficient and within the price range of the average citizen.

He said that if this social concept is defeated as a result of the FCC's new policies, framed to benefit a more affluent class of user, the first to be deprived of home telephone service would be the poor and the elderly—those on a fixed income.

"Such a situation would impact particularly hard in the rural areas of America," he said.

It comes as no surprise to us, Mr. Chairman and members of the Committee, that you've had a parade of those affluent business users and suppliers referred to by Mr. Wiggins appear before you to plead for continuation and even expansion of Federal protectionist policies. As I've said before in this statement, these kinds of businesses have no interest in, and no responsibility for, the average American subscriber. Mr. Wiggins and his kind do—so do we in the telephone business—Bell and Independent alike. We think the Congress should *continue* to express the same kind of concern for the little guy it has in the past.

Now to answer the three specific questions being investigated by this Committee: Should the Bell System be broken up? Should the Federal Government create new competition in the telecommunications business, and finally, are we competing fairly in the terminal equipment market?

The Independent telephone industry's answer to the first two questions is a flat but reasoned "no." Our answer to the third question is that Bell and Independent companies *are* competing fairly but in earnest—and this is what the hardware merchants object to. We believe they want their Federal Government to create and foster artificial competition. While we do not believe competition is in the public interest, as long as we must compete, we will compete in fact and not just in name.

Now I would like to explain to the Committee why we feel so strongly on these three issues, and why our position is in the public interest.

We are convinced that no segment of our society would benefit from the proposal to hack the Bell System to pieces with a legislative sword. From an economic viewpoint this proposal is as traumatic as was King Solomon's crafty proposal that an infant of disputed parentage be cut in twain in the interests of justice.

The test applied to the Bell System complex should be the same as applied to any organization or function: Is it working well? Is it serving the public interest? What benefits, if any, would accrue from breaking up the system?

In any objective analysis of operation and benefit, the Bell complex scores very high. I'm certain that no member of this Committee would question that this nation has the world's best telephone system, and that the services of this system are offered at bargain prices. As one of your key government witnesses, Dr. Tom Whitehead of the Office of Telecommunications Policy, said so positively: "Thanks to the Bell System and to the regulatory policies of the past,

the United States has universal low-cost telephone service that is unparalleled throughout the world." Chairman Wiley of the Federal Communications Commission says the same thing and adds that nothing must be done to harm that system.

Let me emphasize that the success of the Bell System—and the quite parallel success of the Independent operating telephone companies—is a success of our unique system of private enterprise joined with public regulation.

The regulated monopoly telephone industry has done a better job for the public than most firms in the open competitive market. While the cost of all goods and services in this country soared 50 per cent in the years between 1960 and 1973, the cost of local telephone service went up only 24 per cent—and the cost of long distance service stayed practically the same.

With this record of success, why does the telephone industry face the threat of breakup at the behest of this Committee and a band of business firms with sales charts in their eyes?

Actually, I cannot believe that the purposes of this inquiry have any support from the American public. As a resident of Little Rock, out in the heartland of our country, it seems strange to me that at a most crucial time in our history—when our country is beset by ruinous inflation, national political scandals, a crumbling international monetary system, dwindling supplies of food worldwide, a worldwide energy shortage steadily growing worse, and critical national defense needs—a Congressional committee should be considering breaking up the one great system of public service which is universally acclaimed as the most successful private business in the world—by all, that is, except a few who want a protected piece of the action.

I don't believe we should take our world's best telecommunications system for granted just because we are a rich and powerful country. The two don't automatically go together. Just look at the other major public service systems in our nation.

After all, America doesn't have the world's best postal service; we have one of the worst for an advanced nation. We don't have the world's best railroad system; we have one of the worst for an advanced nation, and it's getting worse almost daily. We do have one of the finest commercial airline systems, but only at the cost of heavy subsidies and generally profitless companies.

To me, it's rather significant that when you recite a list of the most troubled public service industries, as I just did, you can't keep from noticing that these are the industries whose operations have been most closely determined by the Federal government.

On the other hand, there is everything in the record of America's telephone industry to show overwhelming success in meeting the communications needs of the public at low prices unmatched anywhere else in the world. Thus I think the burden of proof is on anyone who wants to make basic changes in our communications industry to show that such changes actually would benefit the public.

The economic consequences of breaking up the Bell System would be so great that they are difficult to analyze. However, even a simple review shows great economic damage and injustice.

No benefit to the customers of the Bell companies can be shown as a result of restructuring, but there would be a threat of lowered service standards and higher rates.

For the Independent companies, the breakup of the Bell complex would add greatly to the complexity of settlement agreements on long distance revenues and other areas in which working arrangements must be agreed upon. We oppose any such action as detrimental to our stockholders and our customers.

Divestiture of Western Electric would create tremendous problems for the many independent manufacturers of telephone equipment which serve the Independent telephone companies. As a general rule, Independent telephone companies cannot purchase equipment from Western Electric, but with divestiture Western Electric with its economies of scale could become a formidable competitor for the smaller manufacturers. In such a situation many of the smaller suppliers would be driven out of business. Thus, breakup of the Bell System would start a whole chain of economic impacts, all of which should be taken into account by this Committee.

Thus, there appears no prospect of benefit to anyone from breakup of AT&T, while there would be many ill effects.

This Committee also is reviewing the advisability of fostering competition in the form of sale of terminal equipment and offering of private line intercity service.

Our Independent companies and our customers will suffer if the use of customer provided telephone equipment becomes widespread. The reason is simple. To achieve the social goal of universal service the telephone companies always have averaged their rates so that customers within a given exchange area pay the same rate, regardless of the population density of their areas. This practice has helped make it possible to bring the benefits of modern communications to our rural areas.

Also, we have used a value of service concept under which business firms paid more because the service had a commercial value for them. In effect, business service has subsidized residential customers—helping to make possible the low cost universal service praised before this Committee by OTP Director Tom Whitehead. Other nations such as Great Britain have the same kind of subsidization.

As the telephone industry is stating in every available forum, the more we compete with the unregulated hardware merchants for the equipment needs of business firms, the more we must shift to cost-related pricing of our services. Inevitably we believe this means higher prices for the homeowner, the small business firm, the poor and the elderly.

Now I realize that the hardware merchants are denying that value of service pricing actually has existed. They are saying that actual residential service has subsidized business service, and that the telephone companies will be competing unfairly if they reprice their services for the so-called vertical services to business firms such as PBXs, key systems, etc.

To such claims there is a definitive answer: "Nonsense." For almost 100 years the telephone companies have been setting rate schedules. We know the principles we used. For almost as long, the state regulators have used the same principles, and they know exactly how rates were set. They know that business rates subsidize residential rates.

The courts already have challenged the offhand assumption by the Federal Communications Commission that competition in the telephone industry automatically and *per se* benefits the public. In a landmark decision last May the U. S. Court of Appeals for the District of Columbia remanded a case to the FCC with specific instructions that it must prove the benefit. The Court stated:

"The whole theory of licensing and regulation by government agencies is based on the belief that competition cannot be trusted to do the job of regulation in that particular industry which competition does in other sectors of the economy. Without in any way derogating the merits of the competitive free enterprise system in the economy as a whole, we cannot accept the action of the FCC here in a tightly regulated industry supported by an opinion which does no more than automatically equate the public interest with additional competition." (Hawaiian Telephone Company v. FCC, et al., D.C. Cir No. 73-1018, May 3, 1974.)

Just as in the case of the interconnect suppliers, the FCC has emphasized the benefit to a few business firms from private line intercity service and overlooked the welfare of the ordinary customer. The FCC has given lip service to true competition in intercity service, but in practice the Commission sought to continually delay the Bell System's competitive response, which is a schedule of "hi-lo rates" reflecting the actual costs of providing the service.

The final point being considered by your Committee is the issue of so-called "dirty tricks" supposedly employed by the telephone companies against the interconnect suppliers. It seems to me that your Committee's diligent search for such "tricks" has turned up little insofar as the record shows except a few complaints that Bell has shown business purchase preferences to companies which do business with Bell rather than to companies which don't do business with Bell.

I repeat: I believe the hardware merchants want a sheltered competition with the full array of regulations enforced on the telephone companies but with no regulations on the interconnect industry.

This concludes my discussion of the issues raised by this Committee. I would like to add only that the telephone industry is completely confident that its historic and present position is in the public interest. In that confidence we

are going to the public to inform it on just what is at stake, and we believe the public will react in due time with its traditional collective wisdom.

We are convinced that the Federal Communications Commission has not yet developed sufficient facts to be a competent judge of the true interests of the public. We believe that the ultimate solution of the controversy must be made in Congress through a comprehensive study of our national telecommunications needs and the formulation of a national telecommunications policy.

In that Congressional study I certainly would encourage this Committee to make its full input based on its own research and conclusions. However, I urge you—with all the fervor of a concerned telephone man from Little Rock, Arkansas—not to give serious consideration to an arbitrary breakup of the Bell System or to give encouragement to artificial competition. Piecemeal actions are not in the public interest, in my opinion, and the world's best telecommunications system is too important to the public to be the victim of hasty, fragmented actions.

I thank you for your courtesy in hearing me today.

ARKANSAS TELEPHONE COMPANY OPERATING AREAS





EXHIBIT 2—Rochester Telephone Corp. Statement Re Interconnect Competition

EXCERPTS FROM ROCHESTER TELEPHONE CORPORATION 1973 ANNUAL REPORT LETTER
TO SHARE OWNERS FROM GEORGE S. BEINETTI, PRESIDENT

"Aside from the Kodak Park case, we have fared quite well in the interconnection market. In fact, we believe the emergence of competition has strengthened our entire organization, and we are convinced that we can continue to meet it successfully in 1974."

THE INDUSTRIAL REORGANIZATION ACT (S. 1167)

(The Communications Industry)

WEDNESDAY, JULY 31, 1974

U.S. SENATE,
SUBCOMMITTEE ON ANTITRUST AND MONOPOLY
OF THE COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:04 a.m., in room 6202, Dirksen Senate Office Building, Hon. Philip A. Hart (chairman of the subcommittee), presiding.

Present: Senator Hart.

Staff present: Howard E. O'Leary, Jr., staff director and chief counsel; Gerald Hellerman, special financial adviser; Patricia Y. Barrio, editorial director; Janice C. Williams, chief clerk; Peter N. Chumbris, minority chief counsel; and Charles Kern II, minority counsel.

Senator HART. The subcommittee will be in order.

Our opening witness today is the senior vice president of the American Telephone & Telegraph Co., Mr. Edward B. Crosland.

Mr. Crosland?

STATEMENTS BY PANEL OF WITNESSES ON BEHALF OF A.T. & T.

BAKER, WILLIAM O., PRESIDENT, BELL TELEPHONE LABORATORIES, INC., MURRAY HILL, N.J.;

CROSLAND, EDWARD B., SENIOR VICE PRESIDENT, A.T. & T., NEW YORK, N.Y.;

FLETCHER, STEPHEN H., VICE PRESIDENT, GENERAL COUNSEL, WESTERN ELECTRIC CO., NEW YORK, N.Y.;

HOUGH, RICHARD R., PRESIDENT, LONG LINES DEPARTMENT, A.T. & T., NEW YORK, N.Y.; AND

TRIENENS, HOWARD J., ATTORNEY, SIDNEY & AUSTIN, CHICAGO, ILL.

Mr. CROSLAND. Mr. Chairman, we appreciate very much your permitting us to appear this morning.

Before we begin our presentations, with your permission, sir, I would like to have Mr. Stephen H. Fletcher, who is vice president and general counsel of the Western Electric Co. and who appeared before this committee about this time last year, present three documents for the record which have to do with the Western Electric testimony.

If I may, I would like to call Mr. Fletcher, please.

SENATOR HART. Mr. Fletcher, good morning. Welcome back.

MR. FLETCHER. Thank you, Senator Hart.

After appearing last summer, at which there was a statement presented concerning the structure of the Bell System, there had been questions raised, as you know, about whether the structure of the Bell System was in the public interest. I asked Howard Johnson, who is chairman of the corporation at MIT, former president of MIT, and former dean of the Sloan School, to study the structure of the Bell System and give me his opinion as to whether or not it was in the public interest. He did study the structure and did a good deal of visiting of the plants of the Western Electric Co. laboratories and consulting with officials at the Bell System.

Last week he gave me a report of his conclusions on this question and I would like to submit that statement of Howard Johnson's for the record.

SENATOR HART. It will be received for the record.

[The statement appears as exhibit 1 at the end of this panel's testimony.]

MR. FLETCHER. The second statement that I would like to submit is a statement by John Brown, a vice president of Western Electric Co.

There have been questions or suggestions made during the hearing that in some way perhaps Western Electric prices were fixed in such a way that the competitive products were being subsidized by the noncompetitive products. I think the statement by John Brown describing the cost accounting system used by Western Electric and the fact that Western's prices are based on these costs should put to rest any such suggestions and I submit John Brown's statement for the record at this time.

SENATOR HART. It will be received.

[Mr. Brown's prepared statement appears as exhibit 2 at the end of this panel's oral testimony.]

MR. FLETCHER. The third item is a response of the Bell System to a statement of the Computer Industry Association, concerning the provision of a new data speed 40 service, and the manufacturer of data speed 40 equipment by Teletype Corp., a subsidiary of Western Electric. This statement is not ready at this time, but we hope it will be by the end of the day today, and I would like to have leave to submit that when it is ready.

SENATOR HART. When received, it will be made a part of the record.

[The statement referred to appears as exhibit 3 at the end of this panel's oral testimony.]

MR. FLETCHER. Thank you.

SENATOR HART. You are free to stay there in case there is any further comment.

MR. CROSLAND. Thank you, Mr. Chairman.

I would like to request three other gentlemen to participate with me as a panel. My associates will be Mr. Richard R. Hough, vice president of A.T. & T. and president of the Long Lines Department of A.T. & T.; Mr. Howard J. Trienens of Chicago, an eminent at-

torney with broad experience in telephone and railroad matters and regulation; and Dr. William O. Baker, a noted scientist and president of Bell Telephone Laboratories.

Mr. Chairman, we request that our entire statements be accepted as part of the record. We may well digress from these statements. In an effort to save time, we will try to shorten some of our statements, if possible.

So if it is agreeable with you, sir, we would like our entire statements to be incorporated in the record.

Senator HART. Each of the statements will be printed in the record.

[The prepared statements of Mr. Crosland, Mr. Hough, Mr. Trienens, and Mr. Baker appear as exhibits 4, 5, 6, and 7 at the end of this panel's oral testimony.]

Mr. CROSLAND. Thank you, sir.

Thanks to your courtesy, the three gentlemen with me here will speak as a panel, and with your permission, Mr. Chairman, we would like to respond to your questions following the presentation of our statements, if that is agreeable, because I think certain statements presented by other witnesses might well respond to some questions or answer some questions you might have in mind during the presentation, if that is agreeable, sir. It might save time.

Senator HART. Yes, sir.

Mr. CROSLAND. Thank you, sir.

As you said, Mr. Chairman, I am senior vice president of American Telephone & Telegraphy Co., and the director of the Chesapeake & Potomac Telephone Co. of Virginia and South Central Bell Telephone Co. I have been employed by the Bell System for almost 28 years.

As a matter of fact, in August I will be employed 28 years. Our responsibility over these years has primarily been for legal and regulatory matters and communications services to the Government.

Now, our combined testimony today, Mr. Chairman, will seek to respond to the pervasive and far-reaching question which you posed in July of last year: namely, whether competition in certain segments of the telephone industry would benefit the public.

We assure you, Mr. Chairman, that the Bell System fully recognizes it is not within our province, or that of any other segment of industry, to make the ultimate decisions as to what constitutes the public interest in these matters. These questions address themselves solely to the wisdom of governmental authorities, regulatory, judicial and legislative, both State and Federal. Nonetheless, we think we would be remiss in our obligation to the consumers we serve if we failed to express to the public and to the Government our deep concern over deleterious results we are convinced will follow from present and proposed policies regarding competition. And accordingly, we respectfully are urging regulators and legislators to study the facts in depth and to weigh carefully the consequences of their actions before passing judgment on these exceedingly complex issues which affect importantly every telecommunications user in the Nation.

Manifestly, should appropriate governmental authorities deter-

mine that genuine competition in the furnishing of telecommunications is in the public interest, the Bell System stands ready to operate in a competitive environment.

Should competition be decreed to be the way of life in the future of communications, we strongly insist, however, that it be real competition in the economic sense and not selective, contrived or, if you will, pick and choose competition. Otherwise it would not allow for price flexibilities, would not weed out the inefficient firms, would not achieve the most economic utilization of resources, and would not benefit consumers generally in terms of lower prices and better services which genuine competition is supposed to accomplish.

The final decisions, Mr. Chairman, we believe you will agree, should not depend upon abstract maxims or automatic assumptions, but upon practical results. Competition is not the end in itself. The basic objective is a telecommunications system that will bring the best service at the lowest cost to the largest number of consumers. While competition serves well for most American business, economists, lawmakers, courts, and regulators have long recognized that there are exceptions, special cases where competition hurts rather than helps the average consumer. Our testimony will attempt to show and we believe will show how and why telecommunications is one of these exceptions.

We submit that a policy of injecting competition into telecommunications would reverse the judgement reached by Federal and State authorities many decades ago. After very unhappy experiences with competition in the early days of this business, Government authorities concluded that the public interest is best served when a single telephone company is held responsible for all aspects of service to all customers within an exclusively franchised territory, under close Government regulation. This concept, known as the common carrier principle, has provided this country over many years with the finest communications system in the world, and has remained essentially inviolate until recent years.

Now, what would be the consequences of abandoning this principle and fragmenting the communications system through policies that encourage selective competition? New studies we have made, and our recent experience, lead us to suggest four results:

First, the most important consequence to the average consumer, and one perhaps least understood by many, is that competition will force a profound and revolutionary change in traditional pricing patterns for telecommunications in this country. As we will show in considerable detail, the net effect of this change will be to lower rates primarily for some business firms but increase rates for the Nation's 65 million households with telephone service, with particular impact on low-income families and those living on fixed incomes.

Second, beyond shifting the burden from one class of customers to another, basically large business users to residence users, the expansion of competition as contemplated by present policies and pending proposals would increase the total cost of the Nation's telecommunications, because of wasteful duplication of facilities and other inefficiencies.

Third, the national telecommunications network is composed of

literally trillions of parts, all of which must work at any moment with great precision in complete harmony with all the others. The introduction of facilities and services provided by competing companies, with different standards of quality control and different arrangements for installation, maintenance, and repair, would undoubtedly undermine the coordination in planning and operating the network and this has been vital to high quality service.

And fourth, this loss of unity and cohesion could retard the introduction of new technology into the telecommunications system, and thus reduce the renowned research and development contributions of the Bell Laboratories.

Now, before expanding on the first two points, Mr. Chairman, I would like to comment briefly on several other matters.

Regrettably, considerable confusion has developed with regard to the company's position on interconnection with the Bell System network of equipment manufactured by other companies. I would like to make crystal clear that we are not opposed to all interconnection. The independent telephone companies and the Bell System have long cooperated in providing joint through service and we interconnect with Government-owned facilities, broadcast, data, and computer equipment. In short, we are opposed to interconnection only where it would result in degradation of service or in economic penalty to consumers.

Telephone equipment is being purchased in increasing amounts from other manufacturers by Western Electric, or by the operating telephone companies. I believe last July Mr. Fletcher testified that the operating telephone companies purchased about \$300 million of telephone components from outside suppliers; and they purchased about \$500 million from Western Electric. And since that time, I believe the figures have increased by about 10 to 15 percent in both areas.

In fact, the Bell System has recently announced an organizational change, Mr. Chairman, creating a new division at A.T. & T. to make more efficient the process by which equipment from outside suppliers is evaluated and purchased. The crucial point is that if the telephone companies are to be responsible for good quality telecommunications, they must retain responsibility for the quality of manufacture, installation, operation, and maintenance of the method of interconnection to the network.

We wholeheartedly agree with the concern expressed by Dr. Clay T. Whitehead in his testimony before you earlier this month that the recent trend of Government policy regarding competition has been "turning the Government into a cartel manager, apportioning markets among the 'competitors'." As Dr. Whitehead said, this is "very bad." The danger is that the Federal Government is in the process of creating and protecting a place in the market for new entrants while preventing fair competition by existing common carriers. Under the guise of advancing competition, the Government is placing the consumer in the worst of both worlds—he benefits neither from a regulated natural monopoly nor from true competition.

Some of Dr. Whitehead's other observations appear to be contradictory. On the one hand he praised the Bell System's "unparalleled

accomplishments" under the traditional concept of natural monopoly. Yet he proposes a drastic dismantling of the very structure that has been so successful, without indicating how the new structure would be improved.

The Federal Communications Commission has ruled in favor of so-called competition without any hearings or studies of the consequences of its actions on the average telephone customer. Not until last April, long after its landmark decisions on competition, and following some urging by Members of Congress, did the FCC initiate a factual inquiry into the vital question of the economic impact of competition on consumers.

And I am sure, Mr. Chairman, you recognize that docket as being FCC Docket No. 20003.

We hope the Commission will move forward with this docket with great dispatch. In this docket, the Commission is investigating both the impact of terminal gear from the economic standpoint, on all users, as well as the impact, the economic impact, on users of specialized common carriers or inner-city competitors—both MCI's specialized common carriers and domsats.

The only inquiry by Government officials which addressed the economic consequences on users completed to date was recently conducted by a committee of the National Association of Regulatory and Utility Commissioners. That committee found and condemned the fact that readjustments of prices would result from the introduction of competition in telecommunications and would substantially increase rates for residential telephone users.

We recognize that Congress is ultimately responsible for the laws governing the regulation of telecommunications, and we believe, sir, that Congress will want to weigh the economic consequences that a change in the law or its administration will have on the public generally. It is in this spirit of providing factual information needed to make a responsible decision in the public interest that the Bell System has spoken out on this subject and is testifying today.

If competition in telecommunications is found to be in the public interest and the laws are to be changed to encourage competition, Bell would compete fully and fairly, making price adjustments to a more cost-oriented basis which competition would require. With its record of efficiency and innovation, we have every confidence that the Bell System can perform successfully in a truly competitive situation.

Now, Mr. Chairman, with this brief review of our position, I would like now to develop more fully the primary principles.

At the turn of the century, the telephone business was developing under conditions of unbridled competition. Several companies were scrapping among themselves to establish service in the same area—one company in one part of town, another company in another part; one company on one side of the street, another company on the other; and occasionally, two rivals would be putting up poles and stringing wires side by side. One company's facilities often could not be connected with another's.

It is my judgment, sir, that this all started after 1894, when the Bell patents expired.

Now, consumers often found it was impossible to telephone a neighbor across the street or a relative across town; or to do so, they had to buy service and have telephones installed from two or three different companies. In short, experience at the local level soon made it clear that competition in the telephone business brought wasteful duplication, high costs, poor service, and great confusion.

State and local governments then moved to create a more orderly arrangement. In 1907, New York and Wisconsin Public Service Commissions were created, which were the first two, I believe, created in the United States. They came to understand that in order to obtain the best service for the public at the lowest cost, responsibility for service to all customers in a designated area must be assigned to an individual franchised carrier. At the same time, Government regulation of price, profits, and service was initiated to substitute for competition as the protector of consumer interests. This basic concept, the common carrier principle, has guided the development of telecommunications in this country ever since. It spawned the goal of universal service; a pricing pattern based primarily on the value of service to users; the concept that consumers could hold a single entity responsible for every aspect of service, end to end; and nationwide and statewide averaging of rates, so that telecommunications is made available to consumers to the greatest possible extent on an equitable basis.

It became widely accepted that the early disasters at the local level should not be repeated on the national level. So the common carrier principle was extended nationally as the Bell System developed the long distance transmission facilities needed to connect its own local operating companies and the independent telephone companies. Thus there emerged a closely integrated national network, in effect a single system linking all the telephones in the country.

Recognizing the advantages of a regulated common carrier over a splintered competitive system, Congress as early as 1911, in the Mann-Elkins Act, provided for Federal regulation of interstate telephone service by the Interstate Commerce Commission.

The unity and cohesion achieved under the common carrier concept made possible, as no other structure could, we submit, the achievement of broad social goals—goals that would be impossible to reach under the economic imperatives of a fragmented, competitive system. And so, the primary thrust of Government policy became the attainment of universal service. The objective obviously has great social and economic value for all individuals, both business and residence users; as more people became connected to the network, its use has become more valuable to all. The telephone is widely available to summon help in emergencies, to knit families and friends together, to transact business quickly and conveniently.

But a universal service could be achieved only through rates that most residence subscribers and the small business consumer could afford. Accordingly, with encouragement and, indeed, the insistence of regulatory agencies, rates have been structured to serve this basic objective. Rates for the most basic service—the local use of the residential telephone—are low in relation to costs. Rates for long distance calls, service to businesses, and more elaborate equipment have

been set intentionally to help hold down rates for the local use of the telephone by residential customers.

There are two points I would like to emphasize about the common carrier principle. First, this concept was initiated or strongly supported by government officials—State legislatures, State and Federal regulators, the courts, and the Congress—because they recognized the need to serve the broadest public interest.

And second, the acid test for the longstanding common carrier concept must be the outstanding achievements obtained for consumers generally.

Now, in the early part of this century, numerous State legislatures and courts affirmed that competition in the communications business entailed wasteful duplication, and that regulated common carriers better served the public interest. In 1921, by the Willis-Graham Act, a congressional committee supported the common carrier concept by stating that duplication of telephone facilities “greatly increases the burdens which must be borne by the telephone users,” and affirming the principle that “the best telephone service can be rendered by one company, under proper regulation as to rates and service.”

The objective of universal service was reinforced by the Congress in the Communications Act of 1934. The very first sentence of the act states that the purpose is “to make available, so far as possible, to all the people of the United States, a rapid, efficient, nationwide and worldwide wire and radio communication service with adequate facilities at reasonable charges.”

The Communications Act precludes new entry absent a finding of public interest, and encourages mergers and acquisitions by exempting them from the antitrust laws when approved by the FCC.

In 1953, the Supreme Court held—and this case involved the Mackie Radio Co. which was seeking to compete with RCA to Portugal into the Netherlands. The Supreme Court stated, and I quote:

The very fact that Congress has seen fit to enter into the comprehensive regulation of communications embodied in the Federal Communications Act of 1934 contradicts the notion that national policy unqualifiedly favors competition in communications. The act by its terms prohibits competition by those whose entry does not satisfy the public interest's standard.

And in May of this very year, 1974, the Court of Appeals for the District of Columbia considering a case involving the entry of a new carrier to compete with an established carrier along the same route, affirmed the key point that competition “must be shown to be of benefit to the public.”

I should like to repeat that quotation: the court held that competition “must be shown to be of benefit to the public.”

The court continued:

Yet it is all too embarrassingly apparent that the Commission has been thinking about competition, not in terms primarily as to its benefits to the public, but specifically with the objective of equalizing competition among competitors. This is not the objective or role assigned by law to the Federal Communications Commission.

And the court emphasized the word “not.” And I will go on with the quotation:

As a result of focusing first on competitors, next on competition, and then on the public interest, the FCC has given scant attention to the question of public convenience and necessity.

And then the court concluded :

The whole theory of licensing and regulation by Government agencies is based on the belief that competition cannot be trusted to do the job of regulation in that particular industry which competition does in other sectors of the economy.

These well-established principles, Mr. Chairman, recently reaffirmed by the courts, show that, in my judgment, Dr. Whitehead was just plain wrong in stating to this committee that court decisions establish "competition as the appropriate environment" and in urging that the burden should rest on the regulated entity when a new company seeks to enter a market.

Now, in reality, our national communications policy established long ago by Congress, and reaffirmed by court decisions, explicitly rejects the notion that competition is to be pursued as the ultimate objective. Congress has established the proposition that a common carrier, operating under Government regulation, can provide the best service at the lowest cost to consumers.

As I have indicated, an applicant for new entry into the telecommunications business must prove that the proposal serves the public interest, and properly so under the Communications Act.

The ultimate test of the effectiveness of the common carrier principle and the related goal of universal service is the result achieved. By any standard of comparison, these principles have served the public in the United States exceedingly well. I would like to show very quickly three charts which illustrate the point. They are inserted in my statement if you cannot see them very well.

This chart shows that since 1960 the average consumer's disposable income has increased 122 percent and the Consumer Price Index has increased 50 percent. Yet, costs to the consumer for residential telephone service have increased only 14.4 percent, to be precise, or less than one-third of price increases generally. Incidentally, despite the heavy burden of inflation and significant interstate revenue support for intrastate local costs, interstate toll rates are now at about the same level as of 1960.

Mr. Chairman, I think this is an outstanding achievement. Thus the regulated common carrier has a pricing stability far better than the competitive sectors of the economy. If telephone rates had climbed, as did the cost of living generally, consumers would have paid about \$8.5 billion more in 1973, in the year 1973 than they did.

Now, this second chart specifically compares the percentage increase in telephone rates with increases in other consumer items for that period. As you know, Mr. Chairman, the CPI is comprised of about 400 items. The top line shows all items in the CPI have increased from December 1964 to May 1974 by 55.6 percent. Now, these are the major items into which the CPI is divided by those who prepared it. There are eight subgroups. They are divided into food, medical care, housing, other, apparel, and upkeep, transportation, personal care, reading and recreation. You can see them on the scale there.

Now, in housing are the charges for electricity, gas and telephone service, and as you can see, telephone rates under the present industry structure have increased less than the major components of the

CPI and also less than other regulated utilities. Electricity has increased 47.3 percent, gas 40.7 percent, telephone in this period only 18.5 percent.

A recent U.S. Department of Commerce study revealed that the average American industrial or manufacturing worker needed to work less than 26 hours per year to pay for his basic telephone service, the lowest of the 15 industrial Nations included in the Commerce Department study. In other Nations studied, the work time required to purchase basic telephone service ranged from a low of 30 hours per year in Canada to 179 hours per year in France.

Another indication of the value of service is the extent of use by consumers. This next chart—and this study was prepared by A.T. & T. incidentally—shows that in 1972 the number of telephones per 100 persons averaged 62.8 in the United States, compared with only 31.5 in Japan, 31.4 in the United Kingdom, 26.8 in West Germany, 20.8 in Italy, and 19.9 in France.

As for the goal of universal service, the United States has an unparalleled achievement with telephones in about 94 percent—actually 93.5 percent—of all households. Dean Rostow referred to this figure yesterday as being rather significant, and correctly so.

I suggest, Mr. Chairman, that these data speak eloquently as to the availability, economy, efficiency, and convenience of communications service in our Nation.

Now, Mr. Chairman, I would just like to state that the quality of service, by any measurement you would like to apply, we believe is superb today. We have overcome the problems in New York, as you know, and the other weak spots, and all indexes used by the Federal Communications Commission indicate that our service is good.

In short, Mr. Chairman, consumers in the United States pay less for telephone services than consumers elsewhere, yet the service is more available and is superior.

I have reviewed the principles underlying the American telecommunications policy, Mr. Chairman, because I believe these are fundamental to your inquiry.

We recognize that the Congress and the regulatory agencies have a continuing responsibility, as do we, to seek better structures. We recognize that no one is proposing the old system of two or three telephone companies in every town. Nevertheless, expansion of competition in terminal equipment and intercity markets inevitably involves some of the same problems—divided responsibility, a loss in coordination and cohesion, wasteful duplication of facilities, a restructuring of rates along more cost-related lines, and deviation from nationwide and statewide averaging—all of which most certainly will adversely impact many basic exchange users and may work against the very goals that have been established and endorsed by Congress and most regulatory agencies. Surely all of us must take care not to undermine the fundamental concepts responsible for the unparalleled progress of telecommunications in this country.

New policies seeking to inject selective competition in terminal equipment and intercity markets will affect not only those segments but the telecommunications system as a whole. As I have indicated, the most far-reaching of these effects is that competition, of neces-

sity, will end the traditional pricing pattern that has fostered universal service by providing low rates for the residential consumer.

Ultimately, a competitive system will not permit revenues from one service to contribute to another. The new competitors have chosen to operate only in selected, more profitable segments of the business. They will base their charges upon favorable costs inherent in the selected market segments. In order to preserve as much contribution as possible, existing carriers must then adjust their own rates to meet this new pattern or the new competitors will capture most of the contributions which help to keep exchange service rates lower than they would be otherwise. And so, competition inevitably will lead to a pricing pattern based more closely upon the relevant cost of each particular service. Such a system obviously will limit the use of overall pricing structures to achieve broader social goals. Simply stated, the small residence user will pay more; some big business users will pay less.

Now Mr. Chairman, the magnitude of the contribution now made by other services to hold down the cost of local residential telephone service is, I think, dramatically illustrated on this chart. The bar on the left of this chart shows that the average residential customer pays \$7.85 monthly to obtain basic local exchange telephone service. The bar on the right shows the average cost incurred for this same basic service, to provide this same basic service, is a total of \$13.70 monthly for the cost of the telephone set, the access line to the switching center or local exchange, and the cost of operation.

As I mentioned, this brings to light, Mr. Chairman, a rather dramatic fact. The average residential customer is paying substantially less than the costs associated with his basic local service. To put it another way, if basic local service were to be priced according to costs, and all contribution from the more profitable services were to be eliminated, then the monthly bill for basic monthly service for millions of residential customers could be increased by about 75 percent, or several billion dollars every year. For the Bell System alone, I would think the figure would roughly be approximately \$3.1 billion or \$3.2 billion per year. For the industry as a whole, it would approach more closely a half billion dollars.

Now I am not predicting, Mr. Chairman, that this will happen immediately or in precisely this dimension. But our analysis indicates that the ultimate impact of changes in pricing patterns, brought about by competition, could be substantial indeed. I submit for the record, Mr. Chairman, an appendix to my statement in which Mr. M. G. Killoch, assistant vice president, Service Costs Division of A.T. & T., explains in detail the conclusions and the methodology of this study.

I should also like to submit for the record, Mr. Chairman, a report from Arthur Andersen & Co. recently made, on July 26, following a review of the study by Mr. Keller. And I would like to quote for the record from the statement in which Mr. Richard Walker, a senior partner of Arthur Andersen & Co., in charge of its utility and common carrier work, states that:

Based on the work which I have done and which has been done under my supervision and direction, and on the definitions of service and costing meth-

ods set forth in the statement of Mr. Killoch, this is a reasonable application of this particular costing methodology and provides a basis for the substantive conclusion that one-party resident exchange service costs materially exceed revenues on each of the two bases indicated. Further, our tests indicate that the substantive conclusion is sensitive to the use of alternative assumptions as to cost component and cost allocation factors.

And with your permission, Mr. Chairman, I should like to submit this for the record.

Senator HART. We will receive it.

Mr. CROSLAND. Thank you, sir.

[See exhibit 8 at the end of this panel's oral testimony.]

Mr. CROSLAND. That competition will force an increase in rates for residential customers is the conclusion of a committee of the National Association of Regulatory and Utility Commissioners. State officials who are directly responsible for regulating residential rates. The NARUC committee concluded after studying the question that competition in certain terminal equipment markets and the interstate private line business would bring "a substantial adverse economic impact on local exchange telephone subscribers." Dean Rostow referred to this study yesterday.

And the next chart, Mr. Chairman, portrays who would be hurt most, we believe, among different residential customers. Obviously, low income customers tend to restrict themselves more to basic local telephone service, as you can see by the chart in blue. High income customers can afford more long distance calls and various extras such as multiple sets in the home and more elaborate equipment, labeled "vertical services" at the top of the chart.

As competition compels rate adjustments to reflect costs for each service, this reduces the contribution that other services can make to basic service. Rates for the extras enjoyed by the more affluent will tend to be reduced and rates for basic service must be increased. Thus, a penalty will be imposed primarily on the low income customer, we think—the elderly and others on fixed incomes. If the increased price for basic service should place it beyond the reach of many lower income consumers, the trend would be most unfortunate, and would appear to violate the spirit of the Communications Act with its mandate to make service available to "all."

The significance of shifting a substantial rate burden from business firms to residential customers generally is greater than most of us would at first appreciate. A 1972 survey indicated that 20 percent of the households with telephone service had incomes of less than \$5,000 per year. And the average income was between \$7,500 and \$10,000. Incidentally, in the group over \$5,000 I was surprised to learn that about half of our customers are over 64 years of age.

Thus, the survey illustrates dramatically that many customers with low incomes, especially those on fixed incomes, could be seriously hurt by increases in basic telephone rates caused by the loss of contribution from other telecommunications services.

Now, let me explain how competition in the terminal equipment field impacts the residential customer. If you were in the communications equipment business, as an unregulated supplier, and you were seeking an opening—this is a general you, incidentally—and you were seeking an opening to compete with the telephone compa-

nies, would you not pursue business where the telephone companies' rates are higher in relation to relevant costs?

It is easier for unregulated manufacturers of terminal equipment, who have no obligation to file tariffs or otherwise give notice of price changes, to underprice the telephone company and still make sizable profits. This is precisely the pattern that has been developing in the past several years. Competitors are vigorously seeking to take business away from telephone companies in carefully selected fields.

Although competition has been introduced in these markets only in recent years, experience already shows that the dangers we foresee are very real. For example, we estimate that we have lost to unregulated competitors more than 20,000 PBX and key telephone systems in Bell System territory. A study by the Stanford Research Institute points dramatically to where present trends could take us.

The institute finds that the number of telephones served by PBX's supplied by other companies will have increased five times in only 3 years, from 1971 through 1974. And from 1971 through 1985, the institute estimates, the number of telephones served by other PBX's could increase from less than 200,000 to about 8 million. Those are telephones served by PBX's and not PBX's themselves. A report by Arthur D. Little, Inc., notes that sales of terminal equipment by other companies could reach the billion-dollar range by 1980.

If the telephone companies do not respond to this competition, or if they are not permitted by regulators to compete on equal terms, the bulk of the market for business terminal equipment would be taken over by the new entrants. On the other hand, if the telephone companies do respond to competition in this market, they must adjust rates for these devices.

The important point is that in either case, rates for elaborate equipment for business firms will be reduced—and where contributions from these services have helped to hold down rates for residence services, it will be lost.

Thus competition in terminal equipment could mean that consumers who have no need for business terminal equipment will pay more for their basic telephone service. The extent of the problem is indicated by our estimate that if other companies eventually take over 50 percent of the market for terminal devices, consumers would have to pay about \$1 billion a year more for their basic telephone service. And as already indicated, this burden would fall particularly on low income consumers.

Now, in the intercity private line business, similar economic factors will be at work. The private-line business as a whole makes a contribution to hold rates down for basic local residential service. To the extent that competitors take over the business, or competition forces down Bell's own rates in this field, the contribution is lost.

But there are additional factors that deserve your serious consideration, Mr. Chairman. For one thing, Congress recognized over 50 years ago that the cost of duplicating telephone facilities would ultimately be borne by the telephone users and condemned it. And, Congress over the years has undertaken to prevent this waste by providing regulation of entry, extension of facilities, rates, and service.

The facilities in service and proposed by the specialized, miscellaneous and domestic satellite carriers—our intercity competitors—are estimated to cost about \$1 billion to construct. These facilities will not be used to provide service for remote areas now unserved or for new or different services.

But they will have capacity sufficient to creamskin all of the private line services between the major cities they serve and to divert existing long distance and WATS traffic as well. The promise of developing new and specialized services as alleged during hearings before the FCC is no longer maintained, and to our knowledge has not been fulfilled. The consequence is the type of duplication of facilities which the Congress had hoped to eliminate when they elected to establish the common carrier principle of franchised end-to-end service by one regulated company over 50 years ago.

Moreover, competition by other carriers in the private-line business means the loss of declining unit costs due to the introduction of new technology.

Our next chart, Mr. Chairman, demonstrates how the cost per unit of service varies enormously depending upon the volume of business. For example, a cable with a capacity to carry 1,800 telephone calls costs about \$17.22 per circuit per mile. But a cable with a capacity of 132,000 telephone calls costs about \$1.68 per circuit per mile, a reduction of more than 90 percent. Obviously, diversion of private line business among the duplicating routes of multiple carriers will postpone or preclude the savings that could be obtained from high volume, low cost new transmission technology. This is another cost that must be borne by the public. This will be discussed at length by both Mr. Hough and Dr. Baker.

The splintering of private-line business among various carriers and the diversion of long distance calls necessarily may delay the introduction of such advanced technology that would bring great savings for all the public.

Most important of all is the fact that competition in the intercity markets as in terminal equipment will again undermine a traditional pattern of pricing. Obviously, the cost per unit of service varies significantly over different routes, depending on the volume of business and the types and capacity of the facilities used to serve various points. For example, private line service between Sault Ste. Marie, Mich., and Rhinelander, Wis., is served over facilities whose cost on the average is about twice that of different types of facilities that provide the same service for a similar distance between Detroit, Mich., and Milwaukee, Wis. Despite these variations in cost, the practice in the past—approved and urged by regulatory bodies—has been to average cost in order to provide uniform rates on a nationwide or statewide basis.

Therefore, under nationwide averaged uniform rates, users with service from Sault Ste. Marie to Rhinelander, and from Detroit to Milwaukee, paid the same private-line charges. But when competition forced the abandonment of nationwide average practices, the Sault Ste. Marie to Rhinelander users have to pay substantially more while the Detroit to Milwaukee users pay significantly less for the same service.

This averaging of costs to produce uniform rates has traditionally been affirmed to have valuable economic and social benefits. It has enabled all customers, no matter where they are located, to share in the benefits of advances in technology. It assured that customers in smaller towns paid no more for interstate service than users in the big cities.

What are the broad implications of intercity competition? As rates are lowered for consumers in the more densely populated centers, this loss in revenue must be made up by increasing rates for consumers in large areas of the country which are less developed. Also, more and more business customers will switch from regular long-distance calls to take advantage of the lower rates for private-line service on the high-volume routes. So there is a loss of revenue not only from private lines, but also from regular long-distance service. And most of this revenue must be made up, of course, by other consumers.

We estimate, Mr. Chairman, that if present trends continue, by 1976 the Bell System will sustain a loss of about \$350 million annually in interstate revenue as a result of the expansion of the new intercity competitors. And about \$190 million of this loss is interstate contribution that would have to be made up by higher charges for other services; that is, contribution from those services to our particular local residential services and other services. But this would be only the beginning. The Arthur D. Little report I mentioned earlier projects that the specialized common carrier business will exceed \$1 billion by 1980.

In addition, interstate long-distance revenue helps cover local service costs. Now, Mr. Chairman, the average interstate long-distance call produces about \$2 in revenue. Now, of this amount, about 50 cents goes to help pay the costs of facilities used to provide local exchange service, in other words, about one-fourth of it. Thus, every interstate call that is diverted to the intercity competitors increases revenue requirements for basic local service by about 50 cents.

Mr. Chairman, our concern as I have indicated to you is that the kind of competition now being thrust upon the communications industry is not true competition at all, but contrived and selective.

Let me cite briefly the roadblocks to A.T. & T. in seeking to compete.

The Bell companies would be able to compete effectively and profitably because Bell System costs over the high density routes are significantly lower than the rates charged by competing carriers. But our efforts to introduce competitive private-line rates on high density routes have encountered a series of delays by the FCC, despite the Commission's commitment that existing carriers would be permitted, indeed encouraged, to compete fairly and fully with new carriers. However, it required 18 months from the time they were proposed to make these rates effective. Yet, within days thereafter, our competitors, our selective competitors were permitted to place into effect still lower rates on 1 day's notice.

Our proposal for adjustments in video rates to compete with new carriers and our requests for authorization to provide Dataphone

digital service, using new technology of great benefit to consumers, have encountered similar administrative delays.

True competition has also been prevented by the FCC's restrictions on our use of domestic satellites to provide private line services to customers other than the Federal Government, while no such restrictions were imposed on competitors.

The Bell System is disadvantaged in competing in the terminal equipment market. We are closely regulated; our rates are fixed by published tariffs and can be changed only by administrative procedures which frequently entail long delays. Our competitors in this field are unregulated, free to adjust their prices at any time for competitive advantage.

These conditions and restrictions, we submit, preclude fair and genuine competition.

Now, we believe, Mr. Chairman, we have shown that the national telecommunications system provides the best service at the lowest cost when it is planned, built, and operated as a single system, highly coordinated, under close State and Federal regulation. Under this approach, consumers avoid the cost of unnecessary duplication of facilities; they enjoy economies of scale; they benefit from careful coordination and balancing of all the integrated aspects needed to originate, switch, transmit, and receive all forms of telecommunications.

Most important, this unified system permits the deliberate structuring of rates under Government regulation and policy to favor residential consumers, giving virtually every household the ability to obtain telephone service. This is a result which could not have been achieved in a competitive environment, we believe, where prices are necessarily more cost related.

Nevertheless, there are strong and growing pressures to undermine these basic principles, the very concepts that have been responsible for unmatched, dependable, and reliable service to the Nation.

This is why we are urging this subcommittee, Mr. Chairman, the Congress generally, the regulatory agencies and the public to consider closely the economic and social results of undermining the cohesion of the national telecommunications system. Undoubtedly, some business customers would gain lower rates from the continued expansion of competition in terminal equipment and the intercity markets. And other business firms would benefit from selling this equipment or service. But the responsibility of Government, we think, is to judge the issue not according to benefits to the companies involved, either the Bell System or its competitors, but upon results for the public as a whole.

In sum, Mr. Chairman, we believe competition in telecommunications would not serve the best interest of the vast majority of consumers and would not further the national communications goals.

However, sir, if the policy of the Communications Act is to be changed to encourage competition, certainly that competition should be open and fair to all. The Government should not allocate markets to some competitors and deny them to others; the Government should not shield new competitors from the forces of a free market; the Government should not become, as has been stated in the past, a

"giant handicapper." This, we submit, would also be contrary to the public interest.

Again, Mr. Chairman, the traditional telecommunications structure, under regulation, we believe, has served this Nation well, and we respectfully urge the Congress to weigh carefully the consequences of mandating any change.

Thank you, Mr. Chairman, and now may I ask Mr. Hough to present his statement.

Thank you, sir.

STATEMENT OF RICHARD R. HOUGH

Mr. HOUGH. Mr. Chairman, I have submitted a statement for the record which covers mainly operational, management, and technical considerations with regard to the operation of our nationwide communications network. And while Mr. Crosland, of course, has discussed mainly and in substantial detail economic considerations, with your permission, I would like to generally summarize the points made in my statement, rather than follow it in detail. And then I will be happy at the conclusion of the two remaining statements to join my colleagues in answering questions.

I have been employed by the Bell System for 34 years; half of this time in the Bell Telephone Laboratories in the research and development end of the business. I have had responsibility for the operation of a local telephone operating company. As vice president of engineering of A.T. & T., I have the overall engineering responsibility for the Bell System. And for the last 7½ years, as president of A.T. & T. Long Lines, I have been responsible for the planning, engineering, implementation, management, and operation of the nationwide network that ties together all of the telephone companies in the country into one unified, integrated network, and provides the overseas connections as well.

Now, there is not any question but what this integrated, nationwide communications network is the largest and most complex, highly technical, finely tuned system in the world. And to bring it to its present level of performance and to keep it there, is a task that requires and has required a very unique organizational structure; one which provides a very close coupling of research and development, manufacturing and service or operations.

Now, the Bell System over the years has been recognized as being unique in its ability to tackle the management, planning, and operation of large and complex systems. This has been long recognized. We have been asked by the U.S. Government on many occasions to tackle that kind of job. These are responsibilities we have not sought, but ones that we have taken on at urgent request at high level—and in at least one case, at the personal request of the President of the United States—because this unique structure has provided an ability, a capability, which does not exist elsewhere. Such tasks as the management of Sandoz Laboratories for the Atomic Energy Commission; the development, planning, and design of major atomic energy systems; the DEW Line; the SAGE system, air defense system. And in 1961, President Kennedy asked me to chair a

task force to study our air traffic control system. The results of this study are still in the process of being implemented, 13 years later. Fortunately, that implementation will be completed in the near future. This extreme length of time to implement a complex system is indicative of the need for continuing systems engineering and planning—something that the Federal Aviation Administration has not had—and the rather archaic and difficult procurement rules that make it almost impossible to implement in an efficient and expeditious way. At the urgent request of NASA, the Bell System undertook to provide much needed support in a new organization created for that purpose in the systems planning and engineering of the Apollo program.

As I have said, these responsibilities were not sought, but urged upon us. And those who have appeared before this committee, who would split up the Bell System into separate pieces, would destroy this integrated, highly effective structure which is truly a great national resource; and one which I have indicated has been so frequently called upon; and one which has brought our nationwide communications network to the level where it is really and truly the envy of the world.

Over the years it has grown in the service it provides at better than twice the rate of the gross national product. It has been a tremendously significant factor in the economic growth of this country and the high standard of living we enjoy, and the high level of productivity. It is the life blood of many business; it is a household necessity. And over the years, the services provided by this network have steadily increased in value, while steadily decreasing in real cost to the consumer.

Now, as Mr. Crosland has indicated, this network is extremely complex. It is composed of trillions of parts. It must perform 24 hours a day, 7 days a week, 52 weeks a year, continuously. And while operating continuously, it must continue to grow, accommodate increasing demands. It must adapt and push forward the horizons of new technology, provide new services the customers require, and at the same time, see that the old works well with the new, and the things we do today leave open the door to accommodate the technology in the years ahead. And at the same time, we must optimize this network to minimize the amount of equipment required to do the job.

Now, this is an extremely complex job. It cannot be done in bits and pieces. It must be done as it has been and is being done at this time. It is a joint enterprise; the joining together of the Long Lines Department of the A.T. & T. Co. and the local operating telephone companies in a true partnership that provides joint-through, end-to-end service; a partnership in which we all concur in tariffs. We share revenues and expenses. We agree to common technical standards. We agree to the management and direction of the Long Lines Department in the setting of these technical standards and the planning of the network in its day-to-day real-time management.

Now, there just is not any sharp line of demarcation between the Bell System operating companies and the Long Lines Department of A.T. & T. We have joint ownership of transmission facilities and switching equipment. As associated Bell System companies require

new routes, we share them. We transfer, freely, ownership back and forth to meet the needs and to avoid duplication of facilities and to delay the construction of new routes as long as possible. And in this way, we minimize plants.

Now, Mr. Whitehead, in his statement before this committee, indicated that it made no difference who owned the Long Lines Department. He has demonstrated a true lack of knowledge of just how this system operates and is managed. Can you imagine if the organization I had were completely separate from the rest of the Bell System and publicly owned; can you imagine us transferring plant to another separate company at net book? In other words, original cost, less depreciation. We would have a shareowners' suit on our hands in short order if we transferred it at anything less than full present value. And then it would go into the books of that other company, not at an original cost, less depreciation, but at a current value and would be on their rate base at that rate. And what it would mean is that really instead of sharing routes and minimizing facilities, it would be more to their advantage to build additional paralleling routes and increase the cost.

Over the years, as I shall discuss shortly, through technological advances coming out of the Bell Telephone Laboratories and through the Western Electric Co., we have been able to increase substantially the capacities of our inner-city facilities. And as a result, unit costs—costs per circuit mile, as Mr. Crosland has demonstrated—have gone down dramatically.

Now, these substantial decreases in cost have reflected themselves not only in lower interstate rates, but also, as Mr. Crosland points out, in an increased sharing of the local costs of telephone service by the interstate end of the business. Now, can you imagine that being permitted if the Long Lines Department were a separate, independent company and not part of the same overall ownership and management?

Likewise, who would undertake the major development projects that have only been undertaken by the Bell System to provide these new, high capacity, large systems that the technology has made available?

Now, private line services are also carried on the same network. They share in the same economies, and through the rates charged, as explained by Mr. Crosland, they contribute to the common costs, to the holding down of the costs of ordinary telephone service.

Now, while only a few have recommended so drastic a step as the severing of Long Lines from the Bell System, and the dismembering of the Bell System, there are many others that are already tampering with the integrity of the network, and tampering with it in a very serious way. The FCC has embarked on a course that can have very serious consequences. They have authorized competitive intercity, carriers, the specialized common carriers, and as Dean Rostow clearly pointed out yesterday these were authorized in the Commission's own statement on the basis that they would provide new services and would tap a previously unserved market.

Now, they have not offered to date a single new service, not a single service that the Bell System does not already provide. They are

providing duplicating services over duplicate routes, and as Mr. Crosland pointed out, selectively choosing their markets. In total, it means more total equipment in service to provide the same level of service.

Now we have been ordered to permit the insertion of their facilities into the switched network. Obviously if they are going to be an integral part of the switched network they have to be providing the same kinds of services that the Bell System can provide. But they have said that they have no desire to share in the costs, revenues, tariffs, or standards that are part of the network, and obviously they cannot. If they did they would not be competitive.

They have said that they will have different standards, that they will not be as restrictive as to what can be introduced on their circuits. There is not just one of these new carriers, there are substantial numbers. Already six of them have filed for tariffs.

Now, can you imagine what kind of a mare's nest that makes with substantial numbers of additional carriers with different standards, different objectives, different kinds of signals, different levels of performance and ability to restore interruptions, being made a part of the network? Can you imagine the almost impossible job of trying to have all of this operate smoothly, and the additional costs required? And how do we continue to move on with innovation as we have done so successfully in the past when it requires the concurrence and willingness of a number of other carriers to spend money to innovate for the benefit of the overall system?

There is no incentive for them to do that as competing carriers, and we are left, if we move ahead with the innovation, of being charged with an attempt to put them out of business through changing our technical operation, our signaling system, for example.

Now, as has been indicated, the economies of scale are tremendously important in this network. The technology has enabled us to provide larger and larger systems, systems with increasingly large capacities. We have been able to continually increase the capability of existing systems within the same frequency bands, making the incremental costs of these additional circuits very low.

Of course, in order to realize these lower costs, we must have the requirement for traffic. If you cannot fill them up in a reasonable time, you do not realize the costs. The extent to which that traffic is drained off, it takes longer to realize those costs; it takes longer to justify new and innovative, larger capacity, lower unit cost systems.

We are able to utilize these systems because of the large volume of traffic we carry on the switched message network, message telephone service. This really makes our costs over these competitive routes substantially lower than our competitors.

There are those that argue that this is unfair, and judging from the rate of roadblocks the FCC has placed in our way in our attempts to compete fairly and squarely, they seem to agree. Dean Rostow discussed this yesterday. But this is what the common carrier principle is all about, the pulling together of large numbers of requirements into bundles that enable you to obtain these economies of scale and all customers should be permitted to realize these economies. If this country is to move away from the tradition of nation-

wide averaging and the support that is provided to local telephone service by our interstate services, and do all telephone service by private line services, then it must be with true competition permitted and not the contrived cartelization of the communications business that has been the experience to date.

Now, I would just like to say a word about this concept of end-to-end service. Today you can point to the Bell System and hold it completely responsible for the quality of service in this country. We take the end-to-end service responsibility. To the extent that non-telephone-company devices are permitted to be connected to the services, our ability to take responsibility for this end-to-end service withers away.

Now, Mr. Whitehead in his statement said that he did not see any difference between the customer attaching any appliance he wanted to electrical service, electrical power service to plug in anything he wants. He overlooks the fact that the telephone business is a two-way business and not a one-way business. If I plug a defective toaster into an electric outlet in my home, it only burns my toast. It does not burn my neighbor's or someone across the other side of the country. But if I have a defective telephone set, it provides poor service for lots of innocent customers, wrong numbers, poor transmission, complaints to the telephone company, substantial expense in running down the difficulties.

Now, as Mr. Crosland has indicated, we are not opposing all connection of customer-owned terminal devices to the network. We realize that it is in the public interest and necessary that various kinds of data sets, computers, and other devices be enabled to make the optimum use of this network. But it is important that these be connected through proper protective devices and that the Bell System be permitted to compete fairly and squarely in the area of many of these terminal devices, and not have arbitrary regulatory roadblocks.

Now, just to summarize, in conclusion, there is not any question but that we have the best communications service in the world at the lowest cost. It is the envy of the world. We frequently, over the years, have visitations from foreign countries, committees of Parliament from Britain, studying how we do it, and why, and trying to shape their structure as well as they can within their political constraints to ours. And this service is furnished by an organization that pays almost \$4 billion a year in taxes. It pays dividends to 3 million shareowners, and it employs 1 million people, while across the world most telephone systems are losing money and are a drag on the public coffers.

It is a service that is vital to our economy in this day and age when so many of our vital national systems are in trouble; it seems very foolhardy to risk ruining one system that is performing superbly, and if the Congress considers it difficult and expensive today to try to salvage our railroad system, I hate to contemplate the cost if, through unwise regulation and legislation, it becomes necessary some years down the road to try to salvage our communications system.

Thank you, Mr. Chairman.

Senator HART. I know you do not want to be interrupted, but that last note was sounded yesterday by Dean Rostow.

Mr. CROSLAND. Mr. Trienens. Mr. Chairman.

Senator HART. Mr. Trienens?

STATEMENT OF HOWARD J. TRIENENS

Mr. TRIENENS. Yes, sir. I am here to sound the same note.

Senator HART. Now, with a distinguished partner who once was a regulator, you certainly cannot tell us Government's intrusion is always unwise.

Mr. TRIENENS. Those were the good old days, although they were pretty good having him as a partner, too, I must say, Mr. Chairman. I would say I have practiced law in Chicago. I have done so for a little over 25 years, and I have had the opportunity and the pleasure to represent the Bell System and the railroads in various groups—no railroad as their regular counsel, but a number of railroads and railroad groups in merger, rate revisions, other contested matters. And over those years I have had an opportunity to observe the differences in the structure and the behavior and the regulation of these industries, and I would like to give to the committee some of my insights into these two very different industries.

I do not have to spend your time telling you about the agonies of the railroad business, particularly in the Northeast. The Congress had hearings all last summer, debates all last fall, and came up with a bill called the Regional Rail Reorganization Act of 1973, which the President signed on January 2 of this year. That bill has built in it an article of faith, and that is that a privately owned, profitable, healthy, railroad can be created out of the northeastern railroad mess. I think Secretary Brinegar said that somewhere in the wreckage of the northeastern railroad system there is a healthy railroad trying to crawl out.

The bill sets up machinery, a U.S. Railroad Association, designed to create a new corporation called ConRail, which will be this new, healthy corporation.

Now, nobody is deluding themselves into thinking that this is going to be free, while it is hoped ultimately to create a private corporation which will make money again. Congress has already authorized \$2 billion of Federal appropriations to get this process going and to rehabilitate the railroad and hopefully to get it started.

Experience since this statute was passed casts severe doubt as to whether that is enough money. The doubt has been cast in a number of directions, one of which was by a three-judge court which recently held the statute unconstitutional for failure to provide enough money to existing creditors. Others have said that it will require a lot more money to rehabilitate the railroad, to repair the rotting ties and bent tracks that are causing some of these wrecks you hear about, and that is going to cost a lot of money, quite apart from the creditors.

The chairman, I am sure, felt the shock waves last winter, as we did in Illinois, Indiana, Ohio, and other States, when the Depart-

ment of Transportation issued its preliminary plan. If you remember the maps with orange lines which represented the lines to be abandoned, cutting perhaps 40 percent of the mileage out of the north-eastern railroad system in order, hopefully, not surely but hopefully, to create a healthy railroad out of that existing wreckage. This presents quite a dilemma with the communities, the shippers, the mayors, all screaming about the abandonment of this service. Any time those cries are heeded it adds to the money needed from the Federal Treasury to create a railroad that will operate in the Northeast.

At the same time, even if you cut all that traffic out there is some doubt whether it can be created without very substantially more Federal money. Now, I do not want to suggest that the only problems are in the Northeast. To some degree and to a large degree, the problems of the Northeast are simply the result of regulatory and governmental policies that have been affecting all railroads over the years, a combination of competition and regulation, and it just happened to hit the Northeast first and it is affecting all the railroads.

In addition, much of the energies of railroad management—and I am talking now of western, southern and eastern—those energies are spent fighting among themselves over their divisions of these joint rates on interterritorial traffic, compensation for the use of each other's freight cars, problems of service, where you cannot have adequate through service unless your partner can provide adequate service. No matter how good a job you do, if your connection is in trouble or has wrecks it hurts your joint service you are trying to sell to the shipping public.

Now, these problems of the railroad industry—I am going to first talk about the structure—are quite different from the Bell System. As Mr. Hough has described it, the Bell System is an integrated, nationwide network with common standards, technical standards, standards of service. Unlike the railroads, who have not any research organization worthy of mention in the same breath as Bell Labs, Bell System has research, development, and manufacturing integrated into a system that has brought our Nation the world's finest telephone service and has done so at low rates, despite inflationary pressures.

A couple of months ago when I started preparing this statement, I analyzed the freight rate increases of the railroads in the post-Vietnam era, starting from 1967 when the first rate increases came along, and took them to date, which was then early spring of this year, and found there had been about a 50-percent increase, some territorial variations, but about a 50-percent increase in the interstate freight rate level. Since that analysis of mine, the freight rates have gone up another 10 percent. Now, this is to be contrasted with the Bell System's interstate rate offerings, which have since that same 1967 date been substantially offsetting reductions in the early period and very moderate increases to date. And that is only part of the story, because whereas Penn Central and other bankrupt railroads are receiving Federal aid that I mentioned, at the same time they are paying no taxes—and when I say no taxes, I mean no Federal income taxes, no State taxes, and no local taxes—no taxes.

At the same time the Bell System is paying about \$4.5 billion a year in taxes to Federal, State, and local governments. Now, this contrast between the structures is not one that I discovered by any means. If you check Prof. John Galbraith's book "The New Industrial State," page 357, he comments on the railroads and he points out that because of their different system of development, different history, each part of the railroad industry provided a mere fraction of the total services, and that in an industry which required planning because of its nationwide scope, none of the requisites of planned performance were available.

"It is not surprising," says the professor, "that the results have been singularly bad."

And in the next paragraph he goes on and points out the different development of telephone service and that it has been an unquestioned success because it, "had planning authority coordinate with the whole task."

With these contrasting structures and results, mainly the results produced by and inherent in the structure, it is not surprising at all that a number of observers inside the railroad scene and observers from about have suggested a restructuring of the railroads along the lines of the Bell System. I believe it was Spencer Miller, president of the Maine Central, who first discussed this within the industry some years ago. But it has been picked up by Jervis Langdon, who is president of Penn Central and has advocated that some order be brought out of the present confusion by creating a nationwide control along the lines of A.T. & T. Similar opinions have been expressed by such disparate sources as industrialist Norton Simon, who had a seminar on the railroad business recently, and urged that the Bell System model be followed, and by then Senator Saxbe, who introduced legislation to this effect last September.

Now, that is not surprising to me. What is surprising is to have witnesses come before this committee and advocate that the Bell System be restructured on the present model of the railroads. I refer to a number of witnesses, but particularly and most extremely, Professor Miller who proposed that the Bell System be broken up into the 24 or so operating companies, the Long Line Division be made into a separate transmission company, that which Mr. Hough addressed, and with the manufacturing affiliate spun off and Bell Laboratories, Dr. Baker's institution, spun off. That is a proposal that can only be characterized as, let us restructure the Bell System in order to bring in the same wonderful results we have with the similar structure in the railroads.

Now, I do not want to suggest that everything in the history of the railroad business has parallels in the Bell System. There are some very great differences. There are a lot of lurid stories about the mismanagement and inefficiency of the railroads, and particularly some of the use of railroad money to diversified, unregulated, and sometimes speculative enterprises. Those stories, I think, exaggerate the true causes of the railroad problem. But whether they do or not, those problems have no application to the Bell System, which is confined to providing regulated telecommunications services. It does not and cannot get into these other areas.

There is one other area of similarity that I do want to dwell upon for a moment, Mr. Chairman, and that is the way the rates developed, the history of the rate structure, and some of the parallels we see in present regulatory efforts dealing with competition and regulation. When I use the phrase "value of service rate structure," I am merely talking about a structure that has been developed with a view toward a broader public interest—social, political, regional—as contrasted with a rate structure made by a computer or otherwise closely geared to costs.

Now, in the early years of the railroad business, often at the behest of the regulatory agencies, there were rates made for farm products, forest products, raw materials very, very far below any fully distributed cost formula or any cost formula. Sometimes these rates were called missionary rates to attract and develop a business.

While the railroads had motives for doing this on their own, to develop the country, Congress not only encouraged this approach, but dictated it. In what was called the Hoch-Smith resolution in 1925, Congress ordered the ICC to establish the lowest possible rates on products of agriculture for individual commodities. The railroad rates were designed by the railroads and often described by the Interstate Commerce Commission to balance producing areas, cities, ports into very symmetrically and socially desirable rate structures that had nothing or little to do with relative costs.

Now, this was not by inference. The ICC would directly find, in the case I have cited in my paper, that rates should be made "in the best interest of the carriers, of the ports, and particularly the shippers," and dismissing these ideas that they ought to be made with regard to costs. And the Supreme Court went along with that and sanctioned the policy which said that the controlling factor in rate-making was not cost of service.

Now, this was considered socially desirable in the early 1900's and through the 1920's, and what I want to point to today is what happened when the trucks came along, highways were developed, barge-lines and other competition developed. What happened, what happened to economics, and what happened to regulation.

The truckers were able to come in, because of this value-of-service rate structure, raw materials were low rated and the manufactured products were high rated, and the rates were uniform in broad areas of the country. So trucks would come along, not all over the area, but between those points and as to those particular commodities where the railroad rates on manufactured goods were very high. The trucks could come in and handle that business even though the truck costs were higher than the rail costs because it was the truck costs being lower than the railroad rate which meant they could get the business. They came in under the rate umbrella, truck costs that would make a lot of profits and still be lower than the railroad rate, even though it was way above the railroad cost for that manufactured product between those points.

This was not only selective by commodities but selective by points. The railroads tried to meet this process which is known locally as cream skinning, several ways. On one of them they tried to improve their own technology by buying their own trucks, putting

their own intercity trucklines, and they also tried to meet the rates, to make their own rates more in line with their own rail costs and take the business, get back the business. There they ran into regulatory restraint with respect to technology; the ICC made no bones about it. In cases approved by the Supreme Court as within their regulatory discretion, they limited the railroads' use of truck technology and they did it for the avowed purpose of limiting full railroad competition with over-the-road motor carriers. The motor carriers were to be brought in by the Motor Carrier Act under ICC jurisdiction and the ICC felt it was their role to protect them.

With respect to rate actions, the ICC canceled railroad rate reductions designed to meet competition, notwithstanding that they would make, the reduced rates would make a fine contribution to the railroads' net profit, and otherwise relieve the burdens on other rates, and they did it many times, using fully distributed cost concepts which economists have condemned as unsound, and the Supreme Court has upheld, not because it makes any economic sense, but because these fully distributed cost concepts were, they felt, within the discretion of the regulatory body, notwithstanding the economics of the situation.

There were Congressmen and the Supreme Court who very aptly described the role of the ICC as that of a giant handicapper. We were not going to have a horserace where the speed of the horse determined the outcome. We were going to have a handicapper to decide who was going to win.

Now, the point of all this is not one of shedding tears for the railroads as corporations. The point is what has been the overall effect on the economy and on the consuming public, and on that I am not going to give any expert appraisal of my own. I will simply refer to appraisals that the Council of Economic Advisers have made, first under President Johnson, and later under the current administration, in which they found that the ICC's action in protecting competitors have been detrimental to the interests of the consuming public.

Dr. Peck of Yale, a former member of the Council, has estimated that detriment as amounting to several billions of dollars each year.

As recently as January of this year, the Federal Railroad Administrator, the office in the Department of Transportation, John Ingram, stated that "Artificially sustaining competition hurts the whole Nation in the pocketbook. It is unfair to a far greater number of people. It is a misallocation of transportation resources." And hopefully Congress is considering doing something to restore some degree of relief from this giant handicapping role that the ICC has played to such a great cost to the American people.

So now we come to the telecommunications industry, and where is that industry today? Now, as Mr. Crosland has described the history, telecommunications business came into the 1970's with a value of service rate structure developed in its own way but with the same idea of producing rates which were considered socially desirable, an average to create equality for all users, and most importantly, without any particular regard to costs.

The charts that Mr. Crosland showed indicate that the basic resi-

dence user has been a primary beneficiary; operators of business in low density areas are also beneficiaries.

Now, why was this done? It was done, as Mr. Crosland has indicated, in many instances by the State regulators who have basic jurisdiction over the exchange rate structure, but not only the State regulators. Before World War II, the Pacific Telephone Co. undertook to have a departure from the nationwide average rates because of a cost difference in a particular section of the Pacific Northwest. The FCC rejected any differentiation of toll rates, interstate rates on the basis of costs, saying there ought to be equal charges for equal service, notwithstanding any difference in costs.

Why? It was not the economics of the telephone business; it was the fact that as the Commission then put it, telephone service and the rates charged therefor have an important and direct impact on the daily economic and social lives of the many millions of individual telephone users. So it was in the interest of the user that rates were averaged and costs were not regarded as controlling.

Now, this has led us to this value of service rate structure with the burdens of the total cost being spread in the way that has been described by Mr. Crosland. It has also produced a structure which has, because of its monopoly characteristics, allowed the concentration of the business and the efficiencies that have held the cost down. But one thing that I would like to mention that has not been mentioned so far. What ever happened to the monopoly profits? Because the Bell System is regulated, its return on net worth, as shown by Mr. Cook last summer, is just about one half, just about one half of such unregulated companies as General Motors, General Electric, and IBM. So the monopoly profits are one half of the profits of corporations of comparable size that has been produced by this common carrier principle of regulation.

So along come the trucks of the telephone business, the intercity competitors, the specialized competitors, the terminal gear manufacturers, and because of recent decisions, they are permitted entry into this field. They do not come, as do the trucks, these new competitors do not come and say we will serve the entire country, we will serve the basic residence user at the comparable rates. No. We will come into the intercity market where the high density business is. We will sell terminal equipment to the elaborate business user. And you have to bear in mind that it is Government, it is Government through the common carrier principle and the averaging and the disregard of costs, it is Government that has made the Bell System vulnerable to these competitors because of this rate umbrella created by Government for social reasons, State and Federal Government for social and political reasons that has made the Bell System vulnerable to these selective, pick-and-choose competitors.

Now, if the Bell System does not compete, is not permitted to compete, the contribution made by these services, intercity and terminal services, is lost. In order to maintain the earning equal to the cost of capital and provide a fair return, rates will have to be raised for everyone else. If the Bell System is permitted to compete, the contribution will still be there, but it will not be nearly as much as it is under the value of service rate structure. Either way, competi-

tion means a reorientation of the present rate structure to a cost-oriented rate structure.

One thing that Congress and this committee ought to look right in the eye is, you cannot have it both ways. You cannot have competition into a previously regulated monopoly without the price adjustments that may help some users but will adversely affect the users of basic services. You just cannot have that both ways.

Now, Mr. Dean Rostow said it is a tough choice, but you have got to make the choice. You cannot have it both ways. You have got to look it in the eye, know the consequences, and make that choice.

Now, the choice I am talking about there is between free competition and a regulated monopoly. One thing I think there is no choice about that really is the worst of all worlds is this idea of having regulated, monifored, cartelized handicapper competition of the kind the ICC found itself in, and I thoroughly agree with Mr. Whitehead's characterization that has been repeated here today that the FCC's decisions are turning the Government into a cartel manager, apportioning markets among competitors, and he says, "competitors" not true competitors, just "competitors."

I think Mr. Whitehead has made an accurate appraisal of recent activities of the FCC and is certainly supported by some statements that their staff has made in speeches around the country. And it is not just in rates. It is not just in rates. It is also in a restriction on technology, very reminiscent of the ICC's refusal to let the railroads use the modern technology of trucks and become surface transportation competitors. When the domestic satellites were approved, the FCC inserted a very similar restriction in which the Bell System was precluded from using satellite technology for a period of years in private line competition.

Now, it has been said by philosophers that those who do not study history are condemned to repeat it. If we are to learn anything from our regulatory history, particularly the regulatory history of the surface transportation industry, we ought to know by now that permitting the selective entry of competitors and at the same time regulating to protect those competitors is the worst of all worlds, particularly for the consuming public.

Thank you, Mr. Chairman.

Mr. CHUMBERIS. Before you leave the subject, there is one comparison that has not yet been brought into these hearings, and I would like to get the reaction of all of you to it. Mr. Hellerman and I went to Canada to talk to Bell Canada about the whole picture. In the conversations we both asked the chairman of the board about terminal equipment and interconnect. He said outside terminal equipment and no interconnect are not permitted in Canada; and he gave us a reason why. It is because it would upset their whole system—technology, rates, effect on all the small users, and so forth. So they do not allow any at all. At least we in this country do allow it to the extent that you gentlemen have mentioned herein.

Would you want to comment as to that as we go along? You do not have to do it right now, as to any parallel of why Canada asserts the dangers they see in it.

You have already indicated some of the dangers on the use of interconnecting and terminals.

MR. TRIENENS. Yes, sir. My colleagues will address that perhaps after the next statement. Thank you.

Senator HART. Mr. Baker.

STATEMENT OF WILLIAM O. BAKER

MR. BAKER. Thank you, sir.

I am president of Bell Telephone Laboratories, where I have worked for some years.

I appear before this committee as a representative of the Bell System, but my remarks will be based on a lifetime involvement in science and technology, not only as carried out at Bell Laboratories, but also in various academic and governmental institutions.

And it is in this regard that, as I review the transcript of these proceedings, I wish that it contained more concerted discussion of science and technology. The omission is unworthy of the broad purposes of the committee's activity. And so I am grateful and welcome the occasion to describe briefly how science, technology, and innovation arising from them are related to industrial structure, the Bell System mission, and competition.

In that respect, we should, in the time-honored way of science, comment quickly on definitions.

Competition as a mode of expression of human energy and purpose to excel, to be there first, to do the best, is the primary ingredient of all research and development, and most particularly in the ways that these are practiced in industrial laboratories—such as in the laboratories of the Bell System. And as you well know, sir, the semantic origins of the word "competition" are synonymous with those of competence. The pride that we take in American science and engineering, such as that of the Bell System, which has been approved even by our critics, is based on competence, which indeed arises directly from the ceaseless and productive competition, in all phases and all levels, of our people with the rest of the world's community in science and engineering—and even competition with each other.

And thus we comment, Mr. Chairman, on Mr. Nathan's submissions to the committee, where we try to reflect on how the effects of competition in science and engineering help to produce the overall progress characteristics of highly competitive structures that Mr. Nathan referred to.

Molecules just do not know whether they are present in alleged monopoly or assumed free-market programs, but they are, of course, the stuff of the most intense and refined intellectual rivalry, which in fact is a day-to-day quality of life in the Bell System and its industrial contemporaries around the world. In fact, this rivalry in research and development is the more fierce the larger the institution, and point out that by contrast, hundreds of small, market-oriented laboratories simply seek technical and trade differentiation of their products, with no transferable innovation result. So, at the roots of the matter, we find that the often discussed rubric of indus-

try structure has not much meaning in the forward thrust of human affairs as embodied in natural science and engineering with respect to the role of competition.

The problem of meaning and understanding goes beyond this. For competition to mean anything really basic to the concerns of this subcommittee, it apparently has to be attended by a host of economic traditions and theories which have to do with market structure and entry and so on. And we are simply reporting, Mr. Chairman, that these aspects are not generally necessary to the liberation of energy and the application of human talent in the broader meanings of "compete" and "competence" as reflected in science and technology. In fact, this difference raises a caution from the scientific aspect, since while theory in physical science has an unquestionable record reaching from Newton and gravity to the nuclear age, it is awkward to find a validation of economic theory with respect particularly to innovation. And if there is one, I am sure it should be brought to the attention of these proceedings.

Now, this is not a trivial, even though possibly unsettling, remark. For unless this can be proved to be wrong, are we not taking rather sinister risks for the future of our free society in assuming some consistent, even sacred, generality of qualities in a market structure? I believe we can demonstrate that it is indeed unsound to assume such generality with respect to innovation in science and engineering. Indeed, the proposed irreversible application of such generalizations to the telecommunications industry seems to be both wrong and dangerous. We shall try to reflect on this in technically simplified ways—and we should note a couple of the underlying features.

One is that a product, a single thing, or a component, such as is the currency of conventional market activity—the appropriate example, long ago adopted by the profession of economics, is the mousetrap—has little or no meaning, that component, that single thing, for an operating system. And accordingly, its developers, its engineers and scientists, and its makers and sellers, really have no way of taking responsibility for its performance, short of owning or operating the using system itself. In that situation in, say, the case of transistor radios, where the physiological system is identical with the purchaser who can make his own decisions and evaluations immediately, or even with mousetraps, where although there might be considerable benefit from a wider systems analysis, the critical function in those cases can be pretty well contained in the marketed product itself—its compatibility demands with the rest of the system are only modest.

But in contrast, systems technology and innovation of the kind we are treating today demand at every stage that every component, every part, from the wire on the telephone pole to the elegant digital processors of the No. 4 ESS, must balance in properties—including lifespan and cost—with all the other systems ingredients. And as Mr. Hough has pointed out, the number of those ingredients is more than 10^{12} , it is more in the millions of millions of discrete elements in the case of the Bell System. And an entrepreneur, a product marketer, would not have the same incentive to burden his product design, development, and manufacture with responsibilities for endur-

ance and precise optimization of such a plant as the Bell Systems plant—much of it already being decades old, and which must last, all of it, for many decades into the future. For the entrepreneur has no responsibility for the operation of that plant, for the provision of its services on a universal and timely basis to any and all of the American people. The livelier he is in making, and shall we say, making integrated circuit boards for everybody's enjoyment in record players or hand pocket calculators, or movie camera controls, and machine tool programmers, the livelier he is in those enterprises, the less interested he will be in the extra and often agonizing effort of assuring performance and reliability that our systems demand.

For instance, we find in our No. 1 ESS switching machine that maintenance over the years is 50 percent less than for comparable switching investment with earlier designs, and that the No. 4 ESS switching machine can be arranged to take up one-sixth less, one-sixth of the vastly less space that the prior equivalent toll switching facilities demanded. Now these are systems design features, and yet they impact very heavily and directly on the components, on the integrated circuit packs, for example, with requirements, that if the impact is practical responded to, yields savings for telephone subscribers, which is not, of course, the prime motive of the component manufacturer.

This unique continuity of technical action, from the basic discoveries and inventions through to direct operations in the network, is possible only through joint effort with the Western Electric Co. The Western Electric's role in the conversion of science and engineering into continuously evolving telecommunications capability is unparalleled in industry or Government. Without subjecting the exploratory programs or the final development and design at Bell Laboratories to self-interested control, or even to pressures for manufacturing convenience, the Western Electric responds to the modes and needs for innovation with alacrity and high technical competency and understanding.

Such a way of accomplishing the difficult phases of converting new ideas and devices into something actually usable and makable is not found in the conventional market-ruled enterprises, as proposed to the case of a systems-ruled enterprise. Not only does the Western Electric provide a daily liaison and cooperation at the various branches of Bell Laboratories situated at major Western Electric plants—but allowed to operate wholly autonomously therein—but further, its own laboratories, the laboratories of Western Electric, called the engineering research center, vigorously prepare for new and versatile manufacturing processes which are intimately coordinated with the design and development of new products and systems at Bell Laboratories. Thus, in thin film technology, a variety of basic processes were being explored at Western Electric Engineering Research Center simultaneously and concurrently with the experimental work on the circuitry and devices at Bell Laboratories. As synthetic plastics became major structural elements in the Bell System in new Bell Laboratories designs, the engineering research center of Western Electric conducted pioneering studies of improvements in extrusion and of new processing machinery.

Many other elements of the Western Electric's role have been described in other records for this subcommittee, such as that by Mr. Stephen Fletcher. However, in the context of this report about engineering and science and about innovation, the institutional and personal affiliation with the Western Electric is intrinsic to the whole innovation process we pursue.

For instance, in the matter of quality assurance, such as the result of quality control, a statistical technique discovered at Bell Laboratories which is regarded by the industrial world as the essential step in the serial production of product; in that matter, the Bell Laboratories has independent responsibility for maintaining the highest performance of all Western Electric output on behalf of the operating telephone companies. This, of course, is a primary object of systems innovation through the design and development method. But invariably, and often at large initial cost and difficulty, the Western Electric responds to our extensive and incisive Bell Laboratories requirements for tests and quality checks, both at the early stages and throughout manufacturing schedules. Bell Laboratories has the responsibility, and exercises it whenever needed, of closing down production lines if they produce unsatisfactory quality. Yet, by remarkable merging of interests, and the literal as well as presumed integration of purpose, the cooperation of the Western Electric from production man to top management in accepting and improving with incessant economy the host of new systems features, as we shall sample some of them below, that cooperation is simply indispensable to the function of research and development in telecommunications. And this is, indeed, the proper thing to cite, since the manufacturing methods and processes of the Western Electric are recognized throughout the independent telephone industry as well as in Government as the preferred and pacesetting paths by which new things are made into real devices and systems.

So the Bell Laboratories does depend on every element of an ingenious Western Electric organization, including such things as Western Electric training centers for ESS operation; we depend upon product engineering control centers; we depend on this structure for the translation of our novelty into use just as fully as we depend on our own creativity for the introduction of new systems.

Our greatest stimulus to creativity is the close bond to the operating telephone network which permits us to gauge what is real and what is illusory in new technology. Equally, the stimulus to ingenious design and optimal economy of new products comes from this same coworking with the Western Electric production.

We have this symmetry of stimulus for systems creativity from the operating companies, stimulus for design and economy of product from the Western Electric, and this is illustrated in many areas such as presently, strikingly, in the Denver laboratory for the design of PBX's and related-customer facilities. These are a piece of terminal equipment that we will refer to again shortly. This laboratory is located in the Western Electric factory in Denver, and permits a quick translation of development into useful hardware.

But it has been claimed that these features of network compatibility and reliability do not extend to things like terminal equipment,

which are instead wrongly claimed to operate independently of the system. Examples of such equipment, of course, include the telephone set itself, or a dataphone accessory, or indeed to local distributing methods that we just noted as PBX. And we assert to the contrary that there is a direct and mutual influence between innovation in telephones and other terminal equipment and the intimate coordination of new qualities of such apparatus with known and controllable signaling, transmission, and switching parameters of the system to which it must be attached. As Mr. Hough has brought out earlier, this appears especially in a vast, sensitive structure like the Long Lines operation, but acts also in local networks.

Further, the responsibilities of such attachments have a profound influence on the generation of new science and engineering by the professional experts, when these people know that they are part of the same enterprise that will use their creations. Their compatibility tends to be designed in very early indeed, I can assure you.

And for example, in the history of key telephone systems and auxiliary products, which was referred to by Mr. Frank McDermott, Jr., in earlier sessions of your committee, this history continues uninterrupted technically through the time since the 1A system of 1938. This flow of systems innovations through terminal equipment research, development, design, and manufacture is an interesting case of a theme which we have been reporting just now, that we have just noted. Above all, it illustrates the pressure constantly exerted by consistent systems optimization, the pressure exerted in engineering and operations for innovation and improvement. The intimate liaison of the engineering and operations departments of the A.T. & T. Co. and of its Long Lines with Bell Laboratories provides a guiding thrust for our creation of new components and systems.

We report categorically, Mr. Chairman, that this pressure far exceeds any alleged market stimulus, even for products such as terminal equipment. For these reasons, alleged competition for furnishing seemingly isolated parts of an operating system results in neither satisfactory quality nor reliability of such components nor in actual force for innovation and improvement itself—no manufacturing stimulus either.

So we should look quickly at the record of key telephone technology as an example. As Mr. McDermott's report shows, a constant advance was in the speeding of response to customer usage habits. The key telephone, of course, is as we say a typical case of a business terminal facility, and the speeding of response to the customer usage habits and needs occurred in simplification and economy and insulation and operation of the unit.

It occurred by, in the first decade of this period we are looking at, by the five decibel transmission gain for the basic telephone system, which reported very substantial improvement in quality. It was accompanied by the introduction of various important technical innovations, such as wire-spring relays and printed circuitry, and voice-switched, hands-free transistorized speakerphone, reperforatory dialers, and so on, currently by plug in, easily maintained circuitry. But one set of requirements all this time presented a constant challenge.

They were the need for providing these key telephones, these typi-

cal components of the business set, with full electric powerlines. It had to come from the regular electric power system, and this was caused by the most practical operation requiring signal lights, even though small ones. These were simply built into the way the user expected and wanted and deserved to be able to use the system. But these signal lights were based on incandescent bulbs. They took extra, expensive, and often cumbersome power lines. They had to be powered by separate lines and cables that came into the office that contained those lines.

This signal lamp or optical signaling market is, as you can see, an exceedingly broad one, for you know that winking lights characterize almost every instrument panel, control unit, and other display system of our modern society. They are almost a mode of expression of modern industrial society. And nevertheless, despite the very prosaic market need that everybody needed these things, these were still always electric lamps in the case of telecommunications and in the case of every other kind of things, and they were parts of the system that nevertheless required reliability and uniformity, and replacing these lamps comes to be an intolerable cost for key telephone operation. It is a very difficult cost for many other parts of industry, since one would be using hours of labor for maintenance of them for cents worth of materials' cost and function. Although bulbs themselves do not cost very much, but their lives are unpredictable.

The results were, as we have postulated that they would be, that over these decades, despite this very clear possibility for use, no advances of any importance were made in this field by the general trade. This was particularly true in that vigorous portion of the general industry which makes other electrical components.

The telephone companies, however, demonstrated emphatically that some better display and signaling system was absolutely necessary, and this was made a long-term objective in the Bell Laboratories, and particularly when the new era of solid state electronics came along in the late 1940's. It was therefore in the late fifties that a special effort was undertaken after searching fruitlessly during this early period to see whether a new class of compound that had been identified by Mr. Welker in Germany—it was a semiconductor like the bases of transistors, but a semiconductor of different composition, transparent to visible light—could be made to embody a principle that was discovered at Bell Laboratories in the period of transistor and later semiconductor invention. It grew out of the fact that Chynoweth and McKay had reported in Bell Laboratories, from fundamental structures of junction physics, which is the very heart of the whole field of solid state electronics, a field which, as you know, is now responsible for more than \$30 billion of our gross national product.

Way back in the beginnings of the understanding of this field, it was found that light could be produced from reverse biased structures, as they are called, simple treatments of these very precisely controlled crystals. The rest of the chronicle is an elegant but entirely typical record of scientific and technical creativity, based on systems advance, based on systems stimulus.

You have already guessed the present phase of it, which is that all key telephones will now have signal lights of various colors, thereby notably extending their functions, that are made of these new light-emitting diodes. These light-emitting diodes are so efficient in their power demands that they are simply powered over the ordinary telephone lines. They are manufactured by Western Electric. This laboratory model is powered by less than 2 volts and 3 milliamperes. Now, that was a very modest illumination. But it is so far below and it is perfectly visible and detectable in use, it is so far below the power required for any kind of optical signaling system in any way before, that of course it has opened a completely new era of such signaling. The incandescent bulb of Edison, the fluorescent light invented by Boutry and these light-emitting diodes are the three great steps in the illumination for mankind since the candle and the oil lamp.

What may not be so obvious is that the systems innovation in a vertically integrated industry drives toward improvement of such components and equipment in ways that just do not come from general market activity endeavor. As you will very well know, these diodes which, as you can probably see here, will form all kinds of colors now, are being used in all of the hand computers. They are being increasingly used on coded and other signaling systems. They are essential in the systems of optical communication and data processing now being developed.

This happened in America because we have allowed industries of this scope and character to pursue the most fundamental concepts of physical science, the very action of electrons and waves, of quantum entities envisioned by Einstein and the pioneers in the subject. This work has been translated by Bell into practical technology, and through our patent and licensing and publication policies, has been made also available to any other industry that will find additional uses for a public and economic benefit. And as you know, a very strong industry is arising in this whole light-emitting diode area.

The whole course of these findings has a basis in the kinds of people, the dedication and commitment that they have to make these new processes work, and to create the new things that we pursue.

The same kinds of people, the kinds of stimulus from systems needs, were true for Pfann's invention of zone refining, which created the first usable matter for transistors. It is the worldwide basis for production of all silicon, germanium, and related substances on which solid state electronics depends.

It is perhaps a little poignant recollection that a week or so ago, the fifth anniversary of Armstrong's landing on the moon, reminds one of Sir John Cockcroft's observation a few years ago that without these solid state devices, these crystals, these things that we now find give out light that earlier controlled electrons, these junction devices that came out of the pressures of telephone systems innovations demand, without those devices no space exploration, no satellite orbiting or missile production would, according to Sir John, would have been possible.

So perhaps you will be intrigued that these are some of the ways in which the response to a system's need, in the primary example--

that of the key telephone—has stimulated innovation. In markets that are competitive in the sense of our hearings, like say, garment-making, it is hard to find some similar evidence.

There is, however, innovation that we should remark about in a much different kind of industry such as garment making, and it did not happen in that case through competition. The most important part of it, of course, is the use of synthetic fiber, which has revolutionized the comfort, economy, and, not so incidentally, the ecology of the developed world.

The point is that these fibers came from relatively integrated chemical industries which were interested in raw materials which could be converted directly by them into a systems function, a parallel to telecommunications that we are talking about, a comparable kind of integration and systems need—a systems function such as that of a fiber and a fabric.

Some of us on behalf of the American Chemical Society have recently documented this extraordinary saga in the report entitled "Chemistry and the U.S. Economy." There are some pretty deep lessons, we think, in it for critics of industry concentration and integration and for the relationship between innovation and market allocation and dispersion. But this is not the reason that I refer to it here, sir. The reason is that another recent and dramatic innovation in garment making is that, led by the French industry, increasingly the economic and waste-free cutting of valuable fabric to fit the human shape—I apologize for that pretty dull description of the great couturiers of Paris—but anyway, that is this cutting of the valuable fabric to fit the human shape is done by laser beam.

This is laser energy, or coherent light, discovered by Schawlow and Townes in the Bell Laboratories in 1958. At last, another age-old human labor is being relieved. The snip, snip, snip of the shears is replaced in many centers by the use of ever present machine cutters. Those too will be abolished by the use of the fourth great advance in light generation in modern history.

Once more you will know that new industries have already been derived from this finding. We shall point out later that it can lead, if we are given the chance to apply it, to as dramatic an advance in telecommunications as Bell work on radio and coaxial cables and waveguides has already achieved for our Nation and the world.

But right now my point is different. It merely is that our pressing, relentless, internal competition for systems improvement, for new ways of modulating the energy of signals to handle human information, led us to the laser. It led us to the phenomena of energetic population inversion that Townes perceived first in principle, stemming from his original work in microwave spectroscopy at the Bell Laboratories just following World War II.

It is fascinating, although chilling, to speculate on what might have happened if one had depended on dispersed, fragmented free-market stimulus to introduce lasers into the free world. For one thing, we are quite sure from the work of Basove and Prokharov that we should have been hearing of lasers first from Russia. We should have been hearing of them as sources of the most intense nonnuclear energy ever achieved by man, with brilliance rivaling the

sun. Instead of that, as you know, they completely and fully came from American industry.

As you will know from current work, they offer a high probability of so intense an energy source that it will induce fusion of nuclear particles, yielding controlled thermonuclear reactions. In the last few months, claims of substantial fusion events and the accompanying neutron production due to high energy laser illumination have been reported in the United States.

What sort of détente should we have in a trade agreement to barter some of our phosphate ore, for instance, for a hint of how to make a Soviet carbon dioxide laser? This was actually discovered in our Murray Hill Laboratories by Kumar Patel.

These and derived systems now provide an energy source which is not only the essence of "smart bombs" for national security but for a host of technologies. These range from a measure of continental drift to the world's most efficient ways of laying out, by civil engineering, water and waste duct systems, which must be in line and geometricalley positioned.

These examples we have discussed so far, of the stimulus of systems operation, vertical integration and genuine intellectual competition to innovation, could have been supplied in exhausting detail for all the elements of the Nation's telephone system, as well as to the coordinate impacts on other industries and other things of the Nation that we have cited.

What I am saying is that the extensive evidence you have heard, especially beginning with that of my associate Dr. Jack Baird last year, speaking as the chief engineer of the American Telephone & Telegraph Co., gives excellent technical descriptions of how an integrated system actually functions. Progress in that function, as Mr. Hough has also pointed out, is based on the same methods of advance, Mr. Chairman, that we have attempted to sample quickly today.

We shall not take the time to touch on very many more of them, although we have cited others in our submission.

One that may interest you involves switching which, as you know, involves making someone in the case of a particular telephone conversation of 7 million billion possible combinations, a process which takes place about 600 million times a day.

In that case, the stimulus from the systems need led to the evolution of the digital computer and its accessories. It caused the beginning and has led to the further progress, along with other parts of industry and Government, of the computer age.

The concept of digital processing electrically by the logic of telephone switching was discovered by Stibitz, Bell Laboratories, in 1937, and was achieved in a machine by Stibitz and Williams which performed the calculations of the modern digital computer in 1939. Since then, the digital machines have been vastly improved by us and by others. But the discovery of that phenomenon, coupled with the theory of information, the theory of communication and information theory, generated by Shannon at the Bell Laboratories, has led to the basis for all modern data processing and digital communications.

It says that digital encoding is capable of representing all the

knowledge of mankind. Now, the thing that telegraphers used to seek to encode a telegraph message with Morse code or whatever, that kind of electrical effect is actually capable of encoding anything at any time ever known by man.

Now, that development from the telephone technology has, of course, reached out into all phases of our modern industrial society. The revolution is still in full course. Each No. 4 ESS switching system using digital signals by time division can handle 107,000 terminations, and with the associated processor, which is the computing function itself, will handle at least 350,000 telephone calls an hour in a way that would require hundreds or even thousands of operators to manage. The use of these new facilities is proceeding rapidly.

In view of its history, Mr. Chairman, we are baffled and even dismayed to find that even such continued technical progress as the end-to-end—and ultimately switched—Dataphone digital service developed and readied by the Bell System has not yet been permitted to operate.

This network, which can be extended readily nationwide, is equivalent to a new national resource. In many nations, it could represent a major step into the future and would be of primary value to our own economy, our social order, and education through the digital processing facilities it can enable, those very digital processing facilities that I hurriedly referred to above, which are pervading education and business and learning and government in all phases, and we serve those processes.

Do we not soberly have to inquire whether a dogmatic application or interpretation of theories of competition should be used to deprive a nation of new ways to expedite its business, its government, its social structure, with the help of tens of thousands of terminal machines which this system would support?

We could make also similar references to the growing and widespread use of PBX machines which have been cited from time to time as independent terminal equipment. They are not, of course. They are an intrinsic part of the system.

One aspect of this function that is coming out of the switching science and technology is that we can perform many of the functions of PBX machines at a central office. And, increasingly, the user can get all of the advantages of personalized, localized service without having to have the facilities in his buildings and on his mind. So that the arguments about that particular element of our technology are, indeed, very different than has been claimed.

One other aspect of our systems-induced innovation to which the fallacy of market competition might carelessly be applied should be mentioned. It is the primary matter of materials, which represent a major cost of the telephone plant, and of course represent a vast industry in our country, covering all of the metals, plastics, rubbers, ceramics, and other major classes of substance, which innovates vigorously the industry supporting all of those.

Yet even here the stimulus of the Bell System plant with which we have to live, as well as to help create, has led the Bell System and its laboratories to be a principal source of modern materials science and engineering. This is currently documented in a study of a

special committee of the National Academy of Sciences, which has recently issued the report, "Materials for Man's Needs".

I would only cite in this respect, Mr. Chairman, that the one case of the telephone company system's demand for improved cable sheathing, compared to the classical use of lead, saved in the cost of the synthetic material that the Bell Laboratories and Western Electric developed, saved in the cost of the sheathing material itself, \$2 billion over the past 25 years, which somewhat exceeds the total cost of the fundamental research and fundamental development that the Bell Laboratories spent over that whole period—not the cost of all of the final development, but the whole cost of fundamental research and development.

This sheathing has now replaced lead in power cables. It has caused a revolution in electrical distribution and communications facilities throughout the country. It has reduced the world consumption of lead so drastically that the ecology of lead mining, a very dangerous and difficult subject, has been highly modulated. Even squeeze bottles were a byproduct from this, whether you regard that as a cultural advance or not.

Anyway, we have to say that this venture which replaced a major structural material on a scale that had never been achieved before was not done without difficulty, without stumbles. Innovation everywhere, and especially on our scale, is a risk venture. Dealing with technological risks is a big part of our activity. But unlike the general market quasi-competition, we have to live with what we eventually do. We do not sell the polyethylene cable sheath and walk away from it, as is the classic caveat emptor doctrine of much market entrepreneurship.

In this report to you of the role of network responsibility and vertical integration in the technical progress of telecommunications and electronics, we have tried to treat some examples of what exists. But let us conclude in saying in many ways this is but a prolog for the future if we are given a chance.

We shall not boast of future accomplishments. But we do have faith and are fully committed to the future in our actions and projections right now. Whatever precarious signals one can feel the future in science and engineering is giving, they seem even more exciting and productive than in the past.

New combinations of metals and insulators, operating at near absolute zero, were conceived by Anderson and Josephson, as the Josephson junctions, and at the Bell Laboratories, these utterly unanticipated devices were realized first in our laboratory by Anderson and Rowell. They will measure 10^{-14} , which is a hundredth of a millionth of a millionth, as I can assure you, utterly negligible quantities of volts, a quantity of electrical potential so small that it opens up new horizons of thought about signals and about science, really.

In the work of Walter Brown, Walter Gibson, and their associates at the Bell Telephone Laboratories on the implantation of nuclear projectiles as ions into thin films of semiconductors and insulators, we are finding completely new modes of electronic behavior. A derivative of the channeling studies of ion bombardment was a time measurement by Gibson of a hundred-thousandth of a millionth of a

millionth second, a quantity thousands of times smaller in time than had ever been observed by man, and one which is absolutely intrinsic for our future ventures in telecommunications, because it is a division of time. It is the serialization of the signal in time which, of course, is a basis for human communication, as well as voice or electricity or whatever.

With such basic elements of nature as the second, the volt, the numbers of quanta from a laser being drastically cast into new dimensions, and also with the engineering and scientific capabilities of the digital computers we have spoken about, we believe that a new world of communications and information processing beckons brilliantly in the times ahead.

We can say that the struggle for world position and for ideological value and acceptance will depend heavily on how we meet this future and how well modern communication and information methodology are put at the service of our Nation.

We have spoken about the very exciting new visions here of such things as optical communications, depending on glass fibers. We can see those in a cable like this, in an aggregation like this, of fibers which lose thousands of times less light in passing through them than any form of matter ever lost in transmitting light before. These are thousands of times clearer than any glass ever made, ever put into the finest lenses or optical equipment, before.

As the result of the ruthless demands of the telephone system for reducing the number of completely new kinds of optical repeaters and optical amplifiers which would be put in also, a system depending on these fibers.

I would conclude, beginning on page 35, that we have been permitted to describe to you some features of how the Bell System has evoked and applied technical innovation. As I have personally seen and participated in it, I have felt obliged during this third of a century to maintain intimate association with our contemporaries in government, universities, and industry as this 20th century age of science and engineering has evolved. This has led to many other ventures than those we have cited in telecommunications, such as the first communications satellite, which was created by the Bell System, and subsequently, on the basis of these themes, we have participated in other space ventures such as the Apollo mission and other features that Mr. Hough has referred to.

In the course of this work, and much other with which we have kept fully current, involving other modes of innovation and discovery throughout the world, I would only say finally, Mr. Chairman, that there has merged, both by the testimony of our peers in other laboratories and institutions, including the Government, and by our own firsthand findings, a disintegration of the Bell System would destroy Bell Telephone Laboratories. The forceful professional competition, the stimulus of the insatiable demand and opportunity of the operating network for innovation, for improvement, for economy and for efficiency, the personal excitement and commitment to see realized in honest technical terms, through the partnership of the Western Electric, to see realized the actual manufacture and installation of new things, all of these will not survive dismemberment.

Those of us who have worked for decades to attract and help fulfill the human goals of our professional community working toward a common purpose know that it will not stay together under fracture of the Bell System or even under indefinitely continued harassment.

Yet, the alternatives of being allowed to go forward are achingly alluring, for we represent now the youngest engineering and science laboratory in the country, perhaps in the world, according to the median age of our professional staff, as surveyed by the Livermore Scientific Laboratory, the Manhattan study, of a couple of years ago. With a population of median age in the low 30's, we find an aggregation of talent, including some 2,000 Ph.D.s never before focused on a defined and common purpose. But it is, accordingly, a fragile community. Each individualistic member who will do the creating and inventing and coworking with the Western Electric and the operating companies has to be convinced that it is a doable and practical task. Our own experience in organizing and participating in the national energy research and development programs in the past year demonstrated even more poignantly than before that in vast systems such as electrical utilities, the fragmentation of engineering and systems operational courses and endeavors is disastrous. And that is what would happen to us. What a bitter turn of history it would be to find that the casual application of a vague, outworn, and never proved myth, that "technosystems" should be controlled by a casual salesmanship of hardware really made for something else, should result in a destruction of an existing one of those institutions which we are otherwise trying hard to create.

The notion that Bell Laboratories could endure and function away from the Western Electric and the operating integrated Bell System would be laughable were it not so sinister and so ominous, for as we have said, the stimulus to our thought comes from the bold and stirring challenge that if we can think of new digital networks, of new telephone instruments, of new modes of distribution like satellites and fiber optics, of new kinds of radio qualities like DUV, then we have in the Bell System's integrated affairs and skills the opportunity to see the thrust of human creativity converted to human benefits.

In engineering and science, we have to depend on the evidence, and in these issues that I have cited, with which we conclude, some parts of the world show us the technical alternatives. One of them has been described by a senator of France, Senator Chauvin, as quoted in a recent publication in which Senator Chauvin said:

The situation of the telephone service in the Paris region, 400,000 pending requests for new phones plus 100,000 requests for transfer, has become a subject of sarcasm and jokes, when it does not generate anger. A Paris nightclub entertainer sings everyday, "1 million Frenchmen wait for a telephone and 7 million wait for the dial tone."

Telephony is not the easiest pursuit in the world, and France is by no means the worst example of its difficulties. I can assure you, Mr. Chairman, from the many discussions with my engineering and scientific counterparts in other telephone administrations, in the Penn Central Railroad, in Consolidated Edison Co., in certain airlines, and other essential institutions, that our Government, if it wishes,

can arrange for us to follow France and, with traditional American zeal, go down even deeper. But the wonderful option yet remains, that if our system is supported, not just tolerated and pulled at, but approved and affirmed, the path is upward and straight ahead.

Thank you, sir.

Senator HART. It is a good thing we are about due for a recess. That was a delightful concluding statement.

You were gentle enough to throw in at several points in your passage, as you know, especially you were gentle when I realize what you think of even the legislation I proposed, much less my scientific ability, but it was something that I would inhale slowly, but we have enjoyed trying to get a handle on it.

Unlike that French senator, there will be a number of telephone calls that will have reached my office, some of which will expect fairly prompt reply. I will permit that, among other things, for all of you.

Let me suggest a recess. Is 2:30 all right for you?

Mr. CROSLAND. Yes, 2:30 would be fine with us; any time that is convenient for you, sir.

Senator HART. All right. We will then recess until 2:30.

[Whereupon, at 1:43 p.m., the subcommittee recessed, to reconvene at 2:30 p.m. this same day.]

AFTERNOON SESSION

Senator HART. The subcommittee will come to order.

STATEMENTS BY PANEL OF WITNESSES ON BEHALF OF A.T. & T.— RESUMED

BAKER, WILLIAM O., PRESIDENT, BELL TELEPHONE LABORATORIES, INC., MURRAY HILL, N.J.;

CROSLAND, EDWARD B., SENIOR VICE PRESIDENT, A.T. & T., NEW YORK, N.Y.;

FLETCHER, STEPHEN H., VICE PRESIDENT, GENERAL COUNSEL, WESTERN ELECTRIC CO., NEW YORK, N.Y.;

HOUGH, RICHARD R., PRESIDENT, LONG LINES DEPARTMENT, A.T. & T., NEW YORK, N.Y.; AND

TRIENENS, HOWARD J., ATTORNEY, SIDNEY & AUSTIN, CHICAGO, ILL.

Mr. CROSLAND. Mr. Chairman, when we broke for lunch, I think we had an unanswered question that was posed by Mr. Chumbris.

Would you like for us to clear that up before we start cross-examination, sir?

Senator HART. Fine.

Mr. CROSLAND. With your leave, sir, I will ask Mr. Hough to clarify the Bell Canada's attitude toward competition, and especially as common carriers.

Mr. HOUGH. Well, Bell Canada, like many foreign telephone administrations, appreciates the potential harm to the network and its sensitivity to uncontrolled interconnection, and therefore they, like others, have been opposed to this as you indicated Mr. Scribner told

you it happens in Canada. Their view is also shared by the Canadian Government.

Mr. CHUMBRIS. That is the way I understood it. The Canadian Government made it clear that they were not going to allow interconnect, et cetera, to interfere with the franchise that the company had.

Mr. HOUGH. Yes, sir; and also I understand that this view has been supported in the Canadian courts.

Mr. CHUMBRIS. Thank you very much.

Senator HART. Thank you.

Last year, and this bears somewhat on the point that Mr. Chumbris was discussing, I had the impression that the Bell System position could be described as "Well, if there is going to be competition, let us compete." And this morning I sensed a change in that theme: no specialized common carriers, no terminal equipment manufacturers. Communications should be offered by franchised monopoly common carriers subject to strict regulation.

Please react to that.

Mr. CROSLAND. Mr. Chairman, may I respond to that, please, sir.

If I left that impression I failed miserably in my efforts this morning to state correctly the Bell System position, and I apologize for having done so.

As a matter of fact, our position, if I may capsulize it, sir, is simply that we recognize that it is not in our province at all to determine the public interest, whether there should be or should not be competition in telecommunications. That is within your province, within governmental authority's jurisdiction, and it certainly rests within your discretion.

Now, however, we feel we have an obligation to point out to you and the public generally what the consequences of competition will be in our judgment, if it is permitted in telecommunications. Now, from the beginning, when we did not have any competition, up to about 1894, so history tells me, but there was a great deal of competition in the telecommunications industry from about 1894 until about 1911, if I remember correctly, when regulation came into being on the national level.

In 1921, with the passage of the Lewis-Graham Act, permitting mergers in the telecommunications industry and abhorring competition. In the telecommunications industry the Congress again reaffirmed its position with respect to competition, that telecommunications should be provided by regulated entities in their exclusively franchised territories without competition.

In 1953, I think—and again, in 1974, May of this year—the courts again supported this position.

Our point, sir, is that economic harm and damage would be done to the user if competition is to be one of the rules of the game, and you set these rules. We fully recognize that. We think competition also could result in degradation of the network from a service standpoint, again damage to the user.

So, we feel we are discharging an obligation to Congress by being here today to explain to you what we think will happen, such as this

chart on your right up here indicates, if competition is to be the way of life in the future of telecommunications.

But, if you decide, on the other hand, with all of these facts before you, that competition should be allowed, then we say please let us compete fully and freely. We think we would be supported by economists, by everyone on that score. We do not think we should be required to compete with one arm tied behind our back. We think we have to be unfettered and free. We think that would be a waste of national resources not to permit us to compete fully and freely, which we are not being allowed to do by the FCC in certain areas.

Senator HARR. Now, it is a fair summary, then, that for the reasons you have assigned this morning, you believe wise public policy would go the way of a common carrier, monopoly carrier, rigidly regulated, not a field into which specialized carriers and terminal manufacturers would belong.

Is that right?

Mr. CROSLAND. Mr. Chairman, may I speak to that question in two parts, please, sir. First, with respect to specialized common carriers, as you know, in the early days of telecommunications, as I pointed out earlier, we had two or more local companies providing local exchange telephone service in the same area. The regulatory bodies and Congress also, as well as State legislatures, all agreed that this was wasteful. It was duplicative, it was uneconomical, and they determined that only one telephone company should provide local telephone service.

Now, as a matter of principle I have a very difficult time rationalizing two paralleling facilities, exactly alike in technology, practically, providing the same services the same principle would obtain. There can be no economies of scale. There can be no advantages to the consumer as a result of that.

Now, what have we experienced recently in this area of specialized common carriers? Let us look at the area between St. Louis and Chicago where MCI is operating. For example, there are 107 private line facilities between Chicago and St. Louis, private line services, the type services the Bell System has been providing for years and years between those two cities. Today the MCI's have 100 of the 107 because they price their services on a point-to-point basis and we are on a nationwide averaging basis, so obviously our rates are higher than theirs. We only have today—they have 94 percent of that entire market.

I think it is perfectly clear that there is no advantage to the public or the user to have competing facilities—and the same thing applies to dome-set, so-called dome-set, satellite entities, if they duplicate our facilities—in other words, unless they provide some new and innovative services that do not connect with the switched network, we think that damage could be done to the user.

Now, from a standpoint of terminal gear, our position is that we do not think we should have a monopoly in the terminal equipment area. We think that is an entirely different situation. We do think, obviously, that the integrity of the network demands that we have end-to-end service responsibility, including the telephone, the single-line instrument with the network. Then when you get into the

area of PBX's and that type equipment, business terminals and key systems, we think there economic harm can be done to the user on the local level if that business is taken away from the common carrier who serves that particular franchise territory.

The NEURC report supports that position.

With respect to the area of data equipment, such as computer devices, we do not intend to provide computers to our customers, but we do not expect to deny our customers having computers either, attached to our network. We have never suggested that so long as appropriate connecting units are provided to protect the system from spurious signals being injected into the system, we would object.

In the data field, we provide data equipment, and there are others who provide data equipment. We also agree that value-added type carriers should be allowed to interconnect with our system. And we are making a study now to present evidence to the FCC in connection with docket 20003 that goes to the very point you are raising, Senator.

After that long speech, I hope I have clarified the situation.

Senator HART. Yes, I think that clarified it.

I think counsel did not, but others this morning commented on the possible harm to the network from interconnection of noncarrier equipment, or whatever you call it, and you described the achievements, the technological achievements of the Bell System over the years.

Now, if competition was to be the rule, or the policy, for terminal equipment manufacturers, why can Bell not, with all of its resources and talent, sit down and work out standards, a certification program with testing and all of that business, to permit interconnection without the need for the protective device?

Mr. CROSLAND. Mr. Chairman, may Mr. Hough respond to that, sir?

Senator HART. Yes.

Mr. HOUGH. Well, let me first separate the connection of specialized common carrier facilities into the network—in other words, transmission facilities, private lines—from the terminal-type things and speak to the terminal one first.

Certification, of course, has been proposed and there has been a special committee under auspices of the FCC studying that. But every proposal that we have seen for certification in our view not only would be much more expensive than the provision of protective devices, but also would be extremely difficult to implement.

The fact that a manufacturer, for example, submits one model of a piece of equipment that meets all of the specification requirements does not insure that his entire production is going to be satisfactory, and beyond that there is the question of the adequacy of maintenance. If maintenance is not adequate, then the meeting of specs initially by the initial design bides almost nothing, and the job of continuously evaluating all that might come down the line, inspection and insuring maintenance—there just has not been any workable scheme for doing that at any cost that could really serve the function of protecting the network.

Now, when it comes to the specialized carriers and interconnection with their facilities you will recall I indicated that they have said, and rightly so, that they do not intend to conform to Bell System's specification and standards. They said they will be much more flexible in their standards. They will provide different kinds of services and facilities, and they, of course, will have different tariffs, will not share in the joint provision of service. So there is no way that you can make that compatible if they are going to be competitors.

Mr. CHUMBRIS. Mr. Chairman?

Senator HART. Yes?

Mr. CHUMBRIS. On the other point that you were raising a moment ago as to competition. I think that the thing that struck me was Dean Rostow's statement yesterday that it was not a question of allowing competition, it was a question of allowing new companies to explore new services not reached by the telephone companies. If I may quote exactly from his statement, on page 24 he said thusly:

In these decisions the FCC has nominally followed the recommendations of the report, thus in the basic *MCI* case of 1969 and 1971 authorizing a specialized common carrier private line service between Chicago and St. Louis, and its correlative 1971 and 1972 reports in orders, in docket number 18920 in specialized common carrier services generally, the FCC explicitly relied on the assumption that the new companies would develop new services and explore areas of demand not reached by the telephone companies.

Which is similar, then, to what would happen in Canada, they can compete as long as they come in with something that does not affect the operation that these people have under a franchise.

But now instead of doing that, instead of coming into new areas and new services they are merely coming in and giving the same services that A.T. & T. has been offering all along. There is where you may run into the problems that are shown by those charts referred to by you and that would be consistent with protecting the franchise and your public utility, and at the same time if there is an area where they cannot meet that challenge, just like trains cannot cover everything so ICC let trucks come in to do the work that the trains were not able to do, or buses to do what trains were not able to do. And I think that is what you are trying to show.

Mr. CROSLAND. That is exactly right, Mr. Chumbris.

What I was saying was that any new or innovative service which is not connected with the switched network would not give rise to the problems that Mr. Hough has mentioned. We cannot complain about it, but any service that is strictly competitive with ours, such as private line service between St. Louis and Chicago, as I mentioned earlier, is a drain. I believe Dean Rostow suggested it was a nibbling away of our—the revenues that would be used otherwise to make a contribution primarily to the local user, and that is what this represents up here on the chart.

Mr. CHUMBRIS. Thank you, Mr. Chairman.

Senator HART. As my question indicated, it does not have to be testimony as detailed, as esoteric as Dr. Baker's to leave me cold. I have said this on the record before. I am a Greek in history. But as a dumb layman, I have listened to this business about the need for a unitary operation because this is a complex network and so on.

I am still not persuaded that there is not some method that could be developed that would permit freer utilization of some of these non-Bell products, if you want to call them that. There was nothing more complex than putting a man in space and getting that space machine up. God knows how many hundreds of manufacturers boxed everything up and then it worked. It required, I am sure, enormous effort with respect to compatible standards. But you know, they did it there. And one other impression I have that contributes to this feeling that somehow we should be able to get a handhold on this.

You have described the skills which are developed in the A.T. & T.-Bell-Western Electric network, and they are dramatic. I think almost everybody that has come in here who has testified who is making these other things came out of the Bell System themselves. So they are not plumbers putting phones together. They are former Bell people.

Mr. HOUGH. Well sir, as I have indicated, you cannot put things together in bits and pieces. It has to be a fully integrated consideration of an entire network and all the things that go into making up that network, all the way from the research and development—

Senator HART. Well, where am I wrong in suggesting that there was not that network at Canaveral, but they got the thing up?

Mr. HOUGH. I am going to come to that. You cannot do these things in isolated bits and pieces and try to put them together. That is where many Government programs have come croppers, and why we keep being called upon over and over again to bring a fully integrated systems approach.

Now, I have a lot of respect for the space program, but frankly, this country could not afford to run and advance its communications system in the same manner that was necessary in order to do the space program. They could just not afford it. The cost would be astronomical compared to the present costs, and I know whereof I speak because I had close connections with the space program. But under the rules of Government type of organization and the procurement rules that are involved, it was done about as well as you could possibly accomplish it.

But to translate that into the design, implementation, and operation of our national communications network we would not be paying \$4 billion in taxes, we would be looking for Government subsidies instead.

Mr. TRIENENS. Mr. Chairman, there is one feature of the Government reconciliation which you are trying to achieve which is between the systems approach and the network protection on the one hand versus giving a chance to these other manufacturers to have their wares put into this thing. I think an important development, and it is one that is fairly recent because until recently there was no real efficient way to bring in manufacturers whose production of electronic gear was substantially higher cost than Western Electric. There was no real point in considering this because the telephone company would be under very severe criticism if you went out and paid 20 percent more, or 40 percent more, to an outside firm for what it could make itself.

But there have been great strides in the manufacture of electronic equipment, terminal gear and others, where now the cost, the price relationship, is fairly close, and it is for that reason that the purchases by the operating telephone companies and the purchase by Western from other manufacturers have increased so dramatically in recent years so that there is more and more, up to approaching, what was it, \$700, \$800 million a year, more and more of the manufacturers' products coming out of the network. But under the responsibility for maintenance operation and indeed, the specifications of the system managers, now, that trend will continue, partly because of the economics. If somebody can make it better and there is a consumer demand Bell will be obliged to go out and buy it, just as Mr. McDermott said yesterday we had to do for Delta.

And the other pressure is the regulatory pressure. If there is something better or cheaper available on the outside, the regulatory pressures force the Bell System to acquire from the outside. There is more and more of this going on, which does accomplish, I believe, the purpose the chairman was endeavoring to accomplish.

Mr. CROSLAND. Mr. Chairman, there is a footnote to what Mr. Trippens and Mr. Hough both said. I think I mentioned earlier this morning that in testimony given last year, last July, reference was made to the fact that the Bell System operating companies had purchased the preceding year about \$300 million in telephone components and equipment which was used within the system. The Western Electric Co. had purchased on the outside about \$500 million. For 1973, I should say, they have purchased about 15 percent more. Both operating companies have, between 10 and 15 percent more than they had previously, and Western Electric is purchasing from 10 to 15 percent more than they did previously.

So the figures of \$300 million and \$500 million have increased considerably since then.

Also, the figures I mentioned do not include components that Western purchases from outside suppliers that are used in what Western Electric manufactures themselves, but we buy a tremendous amount of equipment from outside. As I mentioned in my testimony this morning, we have instituted a new unit, the 195 Broadway, to even speed up that activity and make it more feasible for outside companies to sell to the Bell System.

Senator HART. Now, would some of that dollar figure represent interconnect facilities that you bought outside?

Mr. HOUGH. It would represent terminal equipment, if that is what you mean. Yes; it would.

Senator HART. Well, is my understanding correct that when you install the outsiders' equipment and when independent telephone companies install it, a protective device is not required in those installations?

Mr. HOUGH. Yes, sir, that is correct; but you must remember that these things are procured to our specifications. Western Electric undertakes to put inspectors in the suppliers' factories to insure quality control; design changes must be approved by the Bell System; and the Bell System maintains these devices. It is different from permit-

ting anything that comes down the pike to be connected by anyone and maintained by anyone.

Senator HART. I am afraid we are in for an afternoon where there will be a number of interruptions because of votes, and for that reason I would ask the staff to begin now developing a series of questions.

Mr. CROSLAND. I hope we have been responsive to your questions, Mr. Chairman.

Thank you, sir.

Senator HART. Mr. O'Leary?

Mr. O'LEARY. In your prepared testimony you discuss the effects of competition on big business, the elderly, and low-income consumers. We all recognize that those on fixed income and those in lower income brackets suffer more during periods of inflation, to the extent that monthly local charges go up, or charges for long distance go up, but as the colloquy went with Mr. Colter yesterday, your rates do not distinguish between rich and poor, between young and old, merely business and residential. Is that correct?

Mr. CROSLAND. Well, primarily, Mr. O'Leary; but on the other hand certain of our companies have established rates; for example, in the State of Michigan. Our regular flat rate there for one-party service, residential service, is \$7.15 per month. But we have established a special rate, a special measured rate, where people who do not require the use of a telephone to the extent that others might. One party service is \$4.95 a month.

Now, these are message units, and they are allowed \$4.95 worth, so to speak, of telephone service, at 4½ cents per message, and after they exceed \$4.95, then, of course, they pay more.

I can cite some others. We have a comparable situation here in the District, where the one-party service is \$8.85, but the special type, lifeline, economy, or budget service, if you will, is not predicated on economic conditions of the individual or whether he is disadvantaged, but this enters into the picture naturally. One-party residence is \$8.85 here in the District, but he can also get a service for \$3.95, which does, I think, accommodate the problem you are alluding to now.

Mr. O'LEARY. You do offer a different package to the residential user who wants to take advantage of it.

Mr. CROSLAND. Yes, sir. It depends upon their demands for service and their requirements.

Mr. O'LEARY. Right.

With respect to commercial users, you do not distinguish between big business and small; do you?

I understand that perhaps there may be some difference in demand for vertical services, but if General Motors and White Motors leased the same PABX, you charge—

Mr. CROSLAND. Our rate pattern would be the same; yes, sir, for anyone.

Mr. O'LEARY. By the same token, your rates to commercial enterprise do not distinguish between those who offer the necessities of life and those who offer the luxuries. In other words, you do not

charge the Cadillac dealer more than the guy who pushes used cars: do you?

Mr. CROSLAND. No, sir.

Mr. HOUGH. I might say, his bill may be more or less depending on how much service he elects to attain, and General Motors is likely to get much more in the way of vertical services than White Motors, for example.

Mr. CROSLAND. Another thing, too, that would enter into that, Mr. O'Leary, is the fact that we have measured service. If they use more service, naturally they will pay more for it. In some places we have flat rate service, and that is the same charge to everyone.

Mr. O'LEARY. Well, we have made reference before to the testimony of Mr. Warkow from Montgomery Ward, to the effect that by buying their own communications system they could save approximately \$1 million a year.

Now, if wise public policy dictates that they should not buy their own equipment and that they should lease from a common carrier and pay an additional \$1 million a year, they are going to pass that additional cost on to the consumers of their products, are they not?

Mr. CROSLAND. I would assume so; as a business expense, yes. I do not know anything about the facts with respect to the million-dollar savings. I am not familiar with that case.

Mr. HOUGH. Sometimes the companies who claim those million-dollar savings find in practice it is **rather a fantasy**.

Mr. O'LEARY. I understand that, but you would agree that to the extent that a subsidy is involved to the poor and the elderly, and the sick, from commercial enterprises paying higher rates as opposed to residential users, that it is sort of a crude form of subsidy: would you not?

Mr. HOUGH. Yes, but this is the basis on which communications service has been established in this country over many years, and the legislative and regulatory bodies have decided themselves that these social benefits warrant it and the advantages of universal service, which enhance the value of service and enhance the whole economy, make the service more valuable to the car dealers or General Motors or the businessman who can then communicate with more customers. It has to be looked at in a very broad context, and I am sure that the increased costs to subscribers as a whole would more than offset the additional cost that those who bought Cadillacs or Fords might have.

Mr. O'LEARY. To what extent, if at all, has the Bell System performed studies to determine what portion of the residential use is devoted to that which some of us might consider wasteful use of the telephone system, teeny-bopper talk?

Mr. CROSLAND. I do not know that we have made any studies to make that determination. I guess you are referring to an individual who has several children who may use the telephone. When he wants to get his wife, he objects to it. He could get a second line, I guess, under those conditions, but I do not think we have made any studies along that line.

I did have a chart over here which showed earlier a breakdown of the use of communications by categories of income below \$5,000, be-

tween \$7,500 and \$10,000, and above \$30,000, if that would help respond to your question, sir.

Mr. HOUGH. Mr. O'Leary, we do not attempt to evaluate the importance of the contents the communications people use our facilities for. We do not think that is any of our business. So we do not do that. However, you certainly can say that, for the average household, communications is an essential not a luxury.

Mr. O'LEARY. Would you agree that the fully distributed cost studies that you have submitted to the FCC over the past years show that on a service-by-service basis you earn higher returns in your monopoly services than on your competitive services?

Mr. CROSLAND. No, sir.

Mr. HOUGH. No, sir; not as a general statement.

Mr. CROSLAND. Both of us feel that, Mr. O'Leary. I am sorry, sir.

Mr. O'LEARY. I believe Mr. Cox who testified last year submitted the results of FCC's seven-way cost study.

Do you disagree with the results of that particular study?

Mr. CROSLAND. Yes, on a fully allocated cost basis; yes, sir.

Mr. HOUGH. It is not a meaningful study.

Mr. CROSLAND. The method employed there is not adequate or accurate.

Mr. O'LEARY. In any event, that was the conclusion that that study reached.

Mr. CROSLAND. I am not sure that is correct either, Mr. O'Leary. I would have to see the study itself, which I do not have with me at the moment, I do not have it here with me. But we think the methodology is entirely inappropriate.

Mr. O'LEARY. Would you agree that the users of your competitive services, such as private line, generally tend to be businesses or large businesses?

Mr. CROSLAND. Yes, sir.

Mr. O'LEARY. And although you disagree with this seven-way cost study, one could infer from those two things, could they not, that perhaps your monopoly services do, to some extent, subsidize or—

Mr. CROSLAND. Monopoly services?

Mr. O'LEARY. Your monopoly services, when I say that I mean message toll service and WATS do subsidize the competitive services.

Mr. CROSLAND. No, sir.

Mr. HOUGH. No, sir, they do not; and I think that is a complete non sequitur.

Mr. O'LEARY. Well, I am sure you are aware of the suggestions that have been made recently by Mr. Strassburg, the former chief of the FCC Common Carrier Bureau, and Stanford Research Institute, and, I believe, a member of the staff of the New York Public Service Commission, casting doubt on the proposition that business subsidizes residential service. And I am sure you have also seen a reference to the Dittberner report, which somewhat tentatively reaches the opposite conclusion.

Does it surprise you?

Mr. CROSLAND. Yes; I am aware of this.

Mr. O'LEARY. That these separate and distinct sources—

Mr. CROSLAND. Mr. O'Leary, may I say that Mr. Dittberner used some fallacious data. We have reviewed his study completely, and he used some fallacious data. He has now been supplied additional data, and I understand that he will come up with different results after he applies the new data.

Now, insofar as the New York situation is concerned, that arose in a hearing before the New York Commission. My understanding is that in March 1973 a staff member of the New York Public Service Commission manipulated some New York company telephone study data improperly. He used them improperly, I should say, and submitted testimony to show that basic services showed a higher rate of return than vertical services. Those were the points he reached.

But in handling this situation he transferred over \$200 million in expenses from basic to vertical services through error. Now, this error has been called to his attention, and the New York Public Service Commission now has this matter under advisement. And the answer again is that the study is in error, and I am sure we will be vindicated in that connection.

And as Mr. Dittberner has also stated that his study is in error because of improper data that he used.

Mr. O'LEARY. Mr. Crosland.

Mr. CROSLAND. Yes.

Mr. O'LEARY. Would you agree that the proposition that business supports residential is at least in controversy?

Mr. CROSLAND. I would agree simply that Mr. Dittberner has so stated, and that this New York study has so stated. But I would also further assert that they are both in error.

Mr. O'LEARY. Now, would you agree that this subsidy issue, as to whether or not business subsidizes residential, really should not be an overriding concern to those who make public policy in this area, apart from the fact that at best it is an imperfect subsidy?

Would you agree that our primary concern would be with finding out that policy which would encourage the most productivity which would inure to the benefit of all users?

Mr. CROSLAND. Mr. O'Leary, you raise so many questions within a question, the subissues there. I would have to say no to that at the outset.

I agree with the philosophy which was established many decades ago, about 50 years ago, that there were many social goals, as well as economic gains, to the consumers of this Nation where we have business services and where we have interstate and intrastate toll rates subsidizing the local residents' rates. The social benefits then are to achieve the widest possible use of communications we could have.

Now, this of necessity means from a value of service standpoint that a business can reach more customers and a customer can reach more businesses—it is an advantage to the business user. And if you will pardon the personal reference, sir, I tried about 12 to 14 rate cases for the Southern Bell Telephone Co. before coming with A.T. & T. In each case we submitted balance schedules to these commissions, and in each case it was suggested strongly that the schedules, insofar as the residents' charges were concerned, should not be increased in relationship to the other increases we were suggesting.

This has been a philosophy which is ingrained. I think, in all of our regulatory bodies, and I think it is a good one. It has served this Nation well. Otherwise, you would not have a 94-percent penetration of the market today of households. There are many areas that you could not even afford to have telephone service but for this basic philosophy that the regulatory bodies and the Congress and the courts have all endorsed time and time again.

Senator HART. You have some pretty strong recommendations for the committee.

Do you have any recommendations as to how somebody should vote on the Packwood motion to table the Jackson amendment?

[General laughter.]

Senator HART. We will have to take a recess. I am going to find out about that.

Mr. CROSLAND. Senator, I would not dare suggest that one.

[A brief recess was taken.]

Senator HART. Mr. O'Leary?

Mr. O'LEARY. Mr. Crosland, let me restate my question.

Mr. CROSLAND. Yes, sir.

Mr. O'LEARY. To the extent that the availability of telephone service to all income groups is a worthy social goal, there are a number of different ways we could accomplish that end, are there not, in addition to the system which you have testified to today?

Mr. CROSLAND. There possibly are, Mr. O'Leary. But I cannot conceive of any better ones.

Mr. O'LEARY. And my question is, would you agree that it is of more concern or more important for those who make policy in this area to find that system which encourages the most productivity in terms of generating new technology and getting those products and services to the market?

Mr. CROSLAND. Mr. O'Leary, may I refer you again to Mr. Nathan's testimony of several days ago, in which he stated very clearly and very plainly that the productivity of the Bell System was very, very high. Indeed, we have all of the productivity advantages that a competitive industry does, and even more. So I do not understand the nature of your question when you say in terms of greater productivity, because I do not believe it would be achieved in any greater degree than it is now being achieved in our regulated entity situation.

Mr. O'LEARY. Well, I understand both Mr. Nathan's testimony and your position that indeed this is the most productive of all systems that we could have. But is it the goal that should be pursued by those who have to make policy?

Mr. CROSLAND. Mr. O'Leary, I think, if I understand you correctly, sir, you are possibly putting productivity ahead of social objectives.

Is that correct, sir?

Mr. O'LEARY. That is correct.

Mr. CROSLAND. I do not agree with you on that objective. I think that social goals have been the objective of this Nation for many years and I see no reason to change that. But productivity has been attained by this company of ours both in Western Electric and all

other aspects of our operations to a grant degree. Mr. Hough might be able to add something to my statement with respect to the productivity of our company.

Mr. HOUGH. Well, I was just going to say that again, the whole network, the whole system, is a complicated system and the system includes rates and tariffs, the way the costs are distributed among the users of the system, the regulatory history, the legislative history, and I think the worst thing you can do is start chipping away at it in bits and pieces. Now, as Mr. Crosland has said, the determination of the objectives of this country from the standpoint of its communications network is a responsibility of the Congress and the regulatory bodies, and I submit that before you start whittling away at bits and pieces of it, you had better take a broad look at the overall system, not just parts of it, as have been taken to date, and see if you are prepared to face the consequences of a radical reorientation, radical change of this system which works so well to one that you really have no way of telling whether it will work at all or not.

Mr. O'LEARY. That system that you describe, Mr. Hough, is one that does encompass some 1,700 different companies.

Mr. HOUGH. Yes, sir.

Mr. O'LEARY. And throughout that system there is all different kinds of equipment; is there not?

Mr. HOUGH. It is all equipment that is installed, operated, and functions to one set of standards that are set overall by the A.T. & T. Co., and in a partnership that has the same objectives and which compensates each one of those companies in proportion to the costs it incurs and the investment it has to make in order to meet the common objectives of the overall system.

It is not a bunch of individual entrepreneurs going their own way in competition. **It is a team.**

Mr. O'LEARY. Let me get both your reaction and that of Mr. Crosland to this next question:

Is it fair to say that the reason that interconnect manufacturers and specialized common carriers received FCC approval in the first place is that at the time they sought entry there was a demand for products and services which was not being met by the Bell System and other common carriers?

Mr. CROSLAND. To whom are you addressing that now, Mr. O'Leary—Mr. Hough or me?

Mr. O'LEARY. Well, let us start with Mr. Hough.

Mr. HOUGH. Well, first of all, from the standpoint of the specialized common carriers, they based their application for permission to enter the field on the fact, as I indicated before and as Dean Rostow indicated, that they would provide new services currently unavailable and would tap a new unserved market, and the FCC very carefully in their order referred to that.

Now, the facts are they have uncovered no unserved market and no new services, and they are providing exactly the same services as are provided by the Bell System. As a matter of fact, the one that has been in service the longest between St. Louis and Chicago provides the same old PBX tie trunks that the Bell System has provided for years. Nothing new about it.

Now, in the terminal field we provided PBX's in a wide range increasing utility and features over the years. There is no new service here. We provided data sets. We instituted Dataphone service many years ago, in the neighborhood of 15 years ago, before the interconnect company was ever dreamed of.

Mr. O'LEARY. Mr. Hough, is it true that there were a substantial number of users that supported the application of the specialized common carriers to get into business on the basis that the demand was not being met by Bell and a number of other common carriers?

Mr. HOUGH. There were a number of users which the specialized common carriers, MCI in particular, used as a basis for market studies to support their application. But they have not materialized in practice. No new services are being provided.

Mr. O'LEARY. You do not think it is more accurate to say that at the time they sought entry these services they offered were new, and after they gained entry Bell responded by offering the same services?

Mr. HOUGH. No, sir.

Mr. CROSLAND. The other way around.

Mr. HOUGH. The services they provided, are ones we provided for years. As a matter of fact, as I said, they are mostly PBX tie trunks, and when the service fails the customer just picks up his telephone and calls long distance, and the Bell System provides the backup. There are no new services involved here. They are very simple ones.

Mr. O'LEARY. Thank you, Mr. Chairman. I have no further questions.

Senator HART. Mr. Chumbris.

Mr. CHUMBRIS. Thank you, Mr. Chairman.

On the last point, it would seem to me the only thing that I have seen in the record so far would be that some people felt that they could get a lesser rate between Chicago and St. Louis, and hoped they could get someone else to come in and give that service. The new companies had to get the cooperation of A.T. & T. services from the frontline and the rear line, which I understand your telephone companies services them. So it was a matter of these businessmen thinking if they can get a lower rate that would be just great. But the service was exactly the same. It was just the rate that was different.

Mr. HOUGH. Yes, sir; that is exactly right.

Mr. CHUMBRIS. And when you tried to come back with a high-low rate to compete with them, the FCC would not give you approval to compete on a high-low basis.

Is that correct?

Mr. CROSLAND. Yes. And may I say this, Mr. Chumbris, that the situation is further complicated by the fact that a matter of days after we filed our high-low rates, or put into effect our high-low rates, these competitors filed even lower rates and they were allowed to go into effect on 1 day's notice.

Mr. HOUGH. And, of course, the ability of these businesses to get lower rates through these specialized common carriers also depends on our being obstructed from moving our rates down closer to cost,

because there just is not any question—when we have on the order of 20,000 circuits between Chicago and St. Louis and the competitor has about 100, the economies of scale are overwhelming.

Mr. CHUMBRIS. Thank you very much.

I have no further questions, Mr. Chairman.

Senator HART. Mr. Hellerman.

Mr. HELLERMAN. Thank you, Mr. Chairman.

Mr. Hough, in your opinion, has there been any benefit as a result of competition since the *Carterfone* decision, the specialized common carrier decision?

Mr. HOUGH. Benefits to whom?

Mr. HELLERMAN. To the state of technology, to the equipment in use, to its affect on rates.

Mr. HOUGH. No, sir.

Mr. HELLERMAN. Pardon me?

Mr. HOUGH. No, sir. There has been no advance in the state of the technology as a result of this. You will find most of these suppliers of equipment, if not all, are employing Bell System patents obtained through license agreements with the Western Electric Co.

Mr. HELLERMAN. I would like to refer to your testimony in the phase 2 case, the question by Judge Grishard: "Has this outside market at all stimulated the Bell System to innovate more than it has in the past?"

Your answer was, "In the area of PBX's and data modems, I would say yes."

The judge went on: "To that extent, then, the public benefited from that competition?"

Your answer: "Yes, sir."

Mr. HOUGH. Well, that was not the same question as you asked me. You asked me with regard to the advance in the technology by those on the outside supplying this equipment, and I just answered you that they had made no advances in the technology.

Now, I do feel that the advent of different options with regard to PBX's has stimulated the Bell System to also provide some of those; and we have also gone outside and purchased some PBX's and supplied them to our customers from outside organizations. But that is a different matter from the unlimited interconnection of such equipment over which we have no control and cannot assure of good end-to-end service.

Mr. HELLERMAN. You mentioned several times today the fact that you are purchasing more and more equipment outside of the Bell System.

Has that not been due to the demands of the operating companies, particularly led by Southern New England Telephone and New York Telephone?

Mr. HOUGH. Well, all of the equipment supplied by the Western Electric Co. and purchased outside is to meet the demands of the local operating companies. The reason why we have been increasing our purchases outside is that more suitable equipment that we can use and standardize has become available, and available at a reasonable price.

Mr. HELLERMAN. I would like to read part of an article from the

Wall Street Journal which has been previously introduced in the record of October 14, 1971. It says:

Mr. deButts said, however, that the Carterfone decision has stimulated A.T. & T.'s own research and development efforts. He said the company is introducing this year three new switchboards each developed in just 1 year's time, versus a previous average development time of 6 years.

That would seem to say there is some stimulation caused by this competition.

Mr. HOUGH. Yes; I indicated there had been.

Mr. HELLERMAN. You also mentioned before data sets. Looking at a summary of a customer products council meeting of July 29, 1971, there is indication there by Mr. Elmendorf of A.T. & T. that A.T. & T. has allowed their competitors to get 7 to 10 years ahead of them in the design of data sets.

Mr. HOUGH. I do not agree with that.

Mr. HELLERMAN. Do you recall—I do not know whether to direct it to you or to Mr. Crosland—whether or not your received pressure from Southern New England Telephone Co. to come up with new products to meet the competitive demand, or indications from them that since they did not think that Western Electric had competitive equipment, that they were going to Nippon primarily to get equipment, and Pacific Telephone & Telegraph and New York Tel., have also gone outside the Bell System.

Mr. HOUGH. There has always been pressure from the associated operating companies for new devices and new equipment. That is one of the stimuli that Dr. Baker referred to, the thing that stimulates the laboratories, the reason they are being part of an active, ongoing system and part of the operating organization is important—the stimulus they do get from companies.

Now, there is a limit to how much the Bell Laboratories can do. And all of these requests are not met. Priorities have to be established. And to the extent that equipment is available on the outside from other manufacturers that will meet needs of a particular local operating company, why, there is no pressure for them not to, and no reason why they should not, purchase. And they do that, and they do much of it through the Western Electric Co. to take advantage of their warehousing distribution and inspection services. So there is not anything very new about that. That is the way the system has operated for as long as I can remember.

Mr. HELLERMAN. You mentioned earlier this afternoon that in connection with purchases from outside the Bell System of equipment that there is inspection by A.T. & T. personnel of that equipment to meet A.T. & T. standards.

I believe I was informed that when you started buying the NA-409 from Nippon you had people go over there and you had them come back because their inspection procedures were tougher than yours.

Mr. HOUGH. I am not aware of that. But if you will talk to a few of the manufacturers around this country they will tell you how tough our inspection procedures are.

Mr. HELLERMAN. I would like to get off this area for just one minute. Recently, we have read in the papers about IBM's entry into

the domestic satellite area. What is A.T. & T.'s reaction, or position, to IBM's entry into this area?

Mr. CROSLAND. Mr. Hellerman, suppose I respond to that question?

Mr. HELLERMAN. Certainly.

Mr. CROSLAND. Our reaction to IBM's entry into this field—I suspect you have reference to the article that appeared in *Business Week* last week, in which Mr. deButts was quoted as saying that A.T. & T. will do nothing directly to block IBM's current move: "Let me say emphatically," he declares, "that we have no problem with IBM's taking over Lockheed's and MCI's share. Their technology is good."

Now, may I say that Mr. deButts—I have chatted with him about this matter—was merely making reference to the fact that it did not make any difference to him as to who might purchase Lockheed's or MCI's interest in the consortium with Comsat that Lockheed and MCI wanted to withdraw from. That it could be the XYZ Co. as far as he was concerned; it would make no difference insofar as our relationship is concerned.

As Dr. Baker can tell—and so can Mr. Hough—we purchase a lot of equipment from IBM. They do manufacture good quality equipment. And we expect to continue to do so. And their entry into this consortium with Comsat will have no impact on that whatsoever.

On the other hand, let me say that the question of what our attitude will be toward the services that might be undertaken to be provided by this consortium is an entirely different matter. And if it will undertake to provide services that will not, as we mentioned earlier, either impact on the system from a technological standpoint improperly, or on our consumers from an economic standpoint then we would oppose any action they might take just as we would be opposed to any other Comsat-type operation if their competitive actions resulted in detriment, either from a technological standpoint to the user or from an economic standpoint to the user. The fact is IBM has nothing whatsoever to do with the matter.

Mr. HELLERMAN. Are you implying that if IBM decided to use the domestic satellite for voice communications you might be upset?

Mr. CROSLAND. If it is a duplicative facility or service, I should say, a facility duplicating those of ours, and it is not providing any new or innovative services, then we would oppose it, just as we would oppose any other intercity competitor—the MCI's and all of the specialized common carriers, including Comsat's.

The point I am trying to get over is it makes no difference to us whatsoever—the fact that it is IBM. It is what the impact on the users would be.

Mr. HOUGH. It is too early to speculate now. We have no idea what they propose to do. There is no active application before the FCC, except for permission for this change in ownership. And they said in their announcement that they were instituting studies to see what they were going to do. And we will have to wait and see what they are going to do. It could be some completely new and separate service we have not thought of, or it might be something that very closely parallels services that are already being provided. So, we will cross that bridge when we come to it.

Mr. CROSLAND. That is correct.

Mr. HELLERMAN. From the statements at the hearings last year and the statements today and yesterday, it appears that A.T. & T.'s position is that regulation is the answer to any communications problem; is that correct?

Mr. CROSLAND. It has been; yes, sir. I think regulated entities serving in an exclusively franchised area have served this country quite well in the past, and we see no reason to change it.

Mr. HELLERMAN. Is it your position that A.T. & T. is effectively and fully regulated by the Federal and State regulatory commissions?

Mr. CROSLAND. I would say we are extremely well regulated by the State and Federal regulatory bodies. As a matter of fact, you heard my complaint this morning about the regulation by the FCC. So, in some respects, we are overregulated by the FCC at the moment.

Mr. HELLERMAN. I would like to call your attention to a speech by the former chairman of the FCC, Mr. Burch, in New Orleans on October 5, 1973. He said in part: "There is also no question but that this virtual monopoly"—referring to A.T. & T.—"is virtually uncontrollable."

Mr. CROSLAND. Well, I hate to disagree with Mr. Burch, but I have to on that statement, because we have been extremely well controlled. As a matter of fact, the chart I showed you this morning, with respect to the level of rates, is one indication of how well we have been regulated on the interstate side. There have been numerous rate reductions over the years, caused by the FCC; and we have certainly progressed under the FCC, from the standpoint of technological improvements. But I would say that the FCC does have the tools, and if anything, we have been overly regulated.

Mr. HELLERMAN. Continuing on with questions on regulations. I assume you would say it is A.T. & T.'s policy to cooperate with State and Federal regulatory agencies?

Mr. CROSLAND. Yes, sir.

Mr. HELLERMAN. I understand that the New York Telephone Co. received a letter from Chairman Swidler complaining about cooperation and supplying of information to the staff.

Mr. CROSLAND. What letter is that, Mr. Hellerman? I am not aware of it, sir.

Mr. HELLERMAN. I have been told that that letter exists.

Mr. CROSLAND. Do you have it in your possession, sir?

Mr. HELLERMAN. No; we do not have it. I was going to ask you if you could check—

Mr. CROSLAND. No; I do not know anything about that letter.

Mr. HELLERMAN. Could you check and see—from New York Telephone?

Mr. CROSLAND. Yes; we would be glad to look into it and supply the response to you for the record.

[See exhibit 33 at the end of Mr. Crosland's testimony.]

Mr. HELLERMAN. We have heard questions asked and statements made concerning the California and Michigan Commissions, that they have had problems in the past with your accounting system

procedures. How many other State commissions have questioned your accounting procedures, in addition to the States of New York, Michigan, and California?

Mr. CROSLAND. How many do what, sir?

Mr. HELLERMAN. How many State commissions have questioned or found fault with your accounting procedures and your cost figures?

[See exhibit 34 at the end of Mr. Crosland's oral testimony.]

Mr. CROSLAND. Mr. Hellerman, our accounts are all kept in strict accordance with the uniform system of accounts prescribed by the FCC. And I do not know of any charge where we have failed to keep our accounts in accordance with the system. So, from the standpoint of accounting matters, I do not know of any complaints we have received from any State commission that we failed to comply with the uniform system of accounts.

Mr. HELLERMAN. Are you familiar with the suggestions made in the recent Michigan case?

Mr. CROSLAND. With respect to what, sir?

Mr. HELLERMAN. With respect to the accounting methods.

Mr. CROSLAND. The accounting methods followed by the Michigan company, I can assure you, are the same accounting methods followed by all the rest of the Bell System companies. We comply strictly with the uniform system of accounts. So, I do not know of any complaint that could have arisen with respect to the manner in which we keep our accounts.

If you could give me some indication of to what you are referring, I would be happy to look into it.

Mr. HELLERMAN. There were several paragraphs in the recent Michigan rate opinion commenting on accounting matters.

Mr. HOUGH. Well, their argument should be with the FCC, and not with the Michigan company, since we have no choice as to the way we keep our accounts. This is specified by the FCC.

Mr. CROSLAND. We will look into the question again for you, Mr. Hellerman. But if it is a question of our failure to keep our account properly, or the Michigan commissioners complaining about the prescribed method by the FCC, as Mr. Hough said, that is something that they should complain to the FCC about.

Mr. HELLERMAN. There also has been concern voiced from the California Commission as well, that the Western Electric prices are not based on actual costs. There are problems with allocations of overhead and other allocations.

Mr. CROSLAND. Mr. Hellerman, the statement filed by Mr. Fletcher this morning of Mr. Brown's, I think, responds to the question you are raising now.

Mr. HELLERMAN. Why did you oppose having Western Electric become a party to the proposed rate case at the FCC?

Mr. TRIENENS. I am counsel to the case, Mr. Hellerman, and I would tell you, there actually was no necessity whatever for making them a party. There had been a discovery proceeding going on for some 2 years. Every Western document, every request, every interview had been complied with. The reason for it, the technical reason, was that the matter before the FCC, the parties, the people who were made parties by the FCC, are the parties to the interstate

rates. Western Electric does not charge rates for interstate telecommunications services, so they were not a party and there was no need for them to become a party because all the information was being made fully available.

The trial judge, the administrative law judge, found that, and denied the motion to make Western a party without prejudice, that if there were any reason at any time why it would serve the public interest or the making of a complete record to have Western a party, he would reconsider his ruling, but there was no substantive reason for him to rule otherwise at that time.

Mr. HELLERMAN. Are you saying that any request by the staff for information about Western Electric products' costs would be furnished?

Mr. TRIENENS. All information that is available has been furnished and is being furnished in response to the trial staff request, and has been, not only to the trial staff but to their contracting agent, and has been over the last 2 years; yes, sir.

Mr. HELLERMAN. I have a recollection that there were several requests made by the trial staff, and the response came back that that is not a matter properly before them. It is a State matter.

Mr. TRIENENS. There was a question raised as to some studies with respect to intrastate tariffs which were not Western questions. These were a question of operating company studies with respect to intrastate tariffs. We did raise that objection. The trial judge overruled us and we furnished that material to the trial staff.

Mr. HELLERMAN. Why would you object to furnishing it?

Mr. TRIENENS. Because it is related to intrastate rates and had nothing in the world to do with the interstate rates under the jurisdiction of the FCC. And it had nothing to do with that rate case.

Mr. HELLERMAN. If they believed it would be helpful to them should you not show it to them, being a regulated monopoly?

You want regulation. They want to see papers.

Mr. TRIENENS. Well, the papers in question had been furnished to the authorities in Michigan and otherwise who had made the request of these studies of cost and these particular intrastate tariffs. They were made fully available to the people who are regulating us, and as a matter of fact, they have now been furnished to the FCC.

Mr. HELLERMAN. We have had discussion previously of the docket 20003.

Mr. CROSLAND. Yes, sir.

Mr. HELLERMAN. Would you welcome the participation of the Department of Justice in that proceeding?

Mr. CROSLAND. If the Department of Justice desires to participate I see no reason why we would object to their participating in it, as an appropriate party.

Mr. HELLERMAN. In connection with the NARUC report, which has been discussed several times.

Mr. CROSLAND. Yes, sir.

Mr. HELLERMAN. Did not that report question the necessity of continuing to require couplers of the type that have been required up to date in connection with recording equipment and dialers and similar equipment?

Mr. CROSLAND. You are referring to the so-called ancillary equipment, Mr. Hellerman.

Mr. HELLERMAN. Yes.

Mr. CROSLAND. Which was a reference in this report by the NARUC. As you recall, it broke the terminal equipment into three categories: PBX's key sets; data equipment, and computers; and the third group was called ancillary equipment, which was answering devices, dialers, et cetera.

Now, as I recall the report it was not clearcut at all. It said that where these devices were passive, or in other words benign, and would inject no spurious signals into the network, then we should probably allow them to be connected with our services, that these were ancillary or adjuncts to our service. But there is a provision in that report, you will recall, sir, upon rereading it, which clearly says that they expect the telephone company to protect the network against any harm that might result from any of these type devices.

Mr. CHUMBRIS. Would you yield for a moment?

Mr. HELLERMAN. Certainly, Mr. Chumbris.

Mr. CHUMBRIS. Mr. Chairman, Mr. Hellerman just made reference to the National Association of Regulatory Utility Commissioners Report, the report after investigation, May 15, 1974, and I believe it would be well for the record to receive the entire report. It deals with this issue, if I may read just one little small portion.

Senator HART. It will be printed.

[The report referred to appears as exhibit 9 at the end of this panel's oral testimony.]

Mr. CHUMBRIS. It says:

For this reason, and belief that the facts should be known sooner rather than later, the Committee on Communications of the NARUC deemed it necessary and in the public interest to undertake its own factfinding investigation and present the results thereof to Congress, to the Federal Communications Commission, and to the American people at the earliest practicable date. On the basis of its investigation, including independent analyses by its staff, the committee is convinced that under current regulatory policies there will be a substantial adverse economic impact on local exchange telephone subscribers resulting from interconnection principally of private common carrier competition, and further, that the most likely competitive responses by the existing common carriers will serve to exacerbate the near term impact to the detriment of the local exchange subscriber.

And it goes on.

May it be accepted for the record, Mr. Chairman?

Senator HART. It will.

Mr. CHUMBRIS. Thank you.

Mr. HELLERMAN. Mr. Crosland.

Mr. CROSLAND. Yes.

Mr. HELLERMAN. Turning to your prepared testimony you state, "We are not opposed to all interconnection," and you go on to mention that Bell does now interconnect to independent telephone companies.

Is it not true that until 1913, when the American Co. entered into a consent agreement with Attorney General Kingsbury, that the company generally refused to interconnect with independent telephone companies?

Mr. CROSLAND. Mr. Hellerman, first, if that is the Kingsbury

commitment, I think Mr. Kingsbury worked for the American Telephone Co. It is a commitment he made to the Attorney General with respect to our acquisition. I believe, of additional telephone companies. I am not certain of my history to that degree to say that in 1913 we refused to interconnect with other independent telephone companies serving in franchised areas other than those we were franchised to service. Early on I mentioned that there was a great deal of difficulty suffered by the public telephone companies serving in the same communities refused to interconnect with each other, and it was about that time, I think I mentioned this morning, too, that in 1907, I believe it was, New York and Wisconsin Public Service Commissions were created. It was about that time from 1913 on the rule was established that only one telephone company should provide service in a particular area. They were thus franchised under a certificate of convenience and a necessity to provide service in those areas. That was the beginning of the so-called common carrier concept under which one company was responsible end to end for the service within an area, and this was deemed to be in the public interest by regulators, legislators, several legislatures around the country, and the Congress.

Mr. HELLERMAN. Thank you.

You observed that about 14 percent of all U.S. households have telephone service.

Is it not correct to note that there are dozens of Bell served communities in the southeast and south-central States in which over a fourth of the households do not have telephone service?

Mr. CROSLAND. Well, I am not certain of your figures, Mr. Hellerman, but I can also assure you, sir, if it were not for the contribution made to local residence service, as indicated by chart No. 4 up there, that those people would never get telephone service because they could not afford it.

Mr. HELLERMAN. In the development of your household telephone data, am I correct that you count those households with two or three stations and relate this total count to the estimated number of family households?

Mr. CROSLAND. No, sir. I do not think that is correct.

Just a moment, please.

Mr. HOUGH. That number relates to the percentage of households in Bell-served territory that have telephones, and it has nothing to do with extensions or number of telephones in the house. If they have one telephone, they have a telephone.

Mr. CROSLAND. It is just a household with a telephone. I did not know whether it was Bell System, or total Bell System and independent territories. I will get the answer in just a second, sir.

Mr. CHUMBRIS. While you are getting that answer, Mr. Hough, did you say that 94 percent refers to Bell-connected telephones?

Mr. HOUGH. That is my understanding.

Mr. CHUMBRIS. It does not include—

Mr. CROSLAND. It is a total, I think, Mr. Chumbris, both independent- and Bell-provided service.

Mr. CHUMBRIS. Yesterday Mr. Wilbourn testified to the fact that back in about 1940 they only had about 35 or 40 percent of the

people covered by telephones, and now it has been increased tremendously in that part of Arkansas.

Mr. CROSLAND. That is correct.

Mr. HOUGH. It has increased tremendously over the whole country since 1940.

Mr. CROSLAND. Yes; it has.

Mr. HELLERMAN. I have been provided a copy of the steering committee report, license contract study, A.T. & T. general departments, March 1973.

Could one of you gentlemen explain this document briefly?

Mr. HOUGH. May I see it?

As we do periodically in the system, we reexamine some of our activities and procedures and a study organization was set up in order to study the services performed by the A.T. & T. Co. under the licensed contract to determine if they were meeting the needs of the companies, whether they are doing anything that was not necessary, the companies, whether they are doing anything that was not necessary, and what was an appropriate way of financing the licensed contract, and this happens to be a report of a steering committee which, overall, supervised that effort.

Mr. HELLERMAN. Were there top management people on that steering committee?

Mr. CROSLAND. Yes, sir. Well, not on the steering committee. There was top management. But it depends on how you define top management.

Well, let me just add to what Mr. Hough said. Mr. Hellerman, we subject ourselves to self-examination periodically, as any good business would, and I think if we did not react to constructive criticism, self-criticism, that any business that fails to do that is doomed to failure. And so, periodically, we do just what Mr. Hough described for this specific purpose, to find if there are better ways that we can do jobs than as we undertake them at that moment.

Mr. HELLERMAN. One of the major recommendations apparently was stronger A.T. & T. leadership, direction, and control required. Another one was better use of manpower needed.

Mr. HOUGH. I did not hear the second one.

Mr. HELLERMAN. Better use of manpower needed. In that regard, it appears that there is heavy concentration on Bell Laboratories.

Mr. CROSLAND. Heavy concentration of what?

Mr. HELLERMAN. Of comments and reports and recommendations on Bell Laboratories.

Mr. HOUGH. Well, there were separate studies made of the A.T. & T. general departments and the Bell Laboratories, and I did not have a chance to see just what you have there. It may be that that may be the Bell Laboratories part of the report and that would put heavy concentration there.

Mr. HELLERMAN. I wonder if you would provide to the staff a set of all of the studies that were prepared under this report.

Mr. CROSLAND. Mr. Hellerman, I do not believe that we would like to submit that to the staff. Mr. Chairman, it contains some information which we think is of a proprietary nature, and I would like to review these studies, if I may, Mr. Chairman, and then get back

to you with a report as to whether we would or not, and then file it, if that is agreeable with you, sir.

Senator HART. All right.

Mr. HELLERMAN. It is my understanding it has been turned over to FCC, if that would help.

Mr. CROSLAND. Let me check into it, Mr. Hellerman, and I will get back to you.

Mr. HOUGH. I believe it is considered proprietary and marked so whenever it has been furnished to the FCC on this.

Mr. CROSLAND. We will review it and we will certainly get back to you.

Senator HART. I take it if it has gone to the FCC it probably will come to us, and if it has not it will not.

Is that it?

Mr. TRIENENS. No, sir. The way it works is that the FCC has been given complete access.

[Concerning the above discussion, see exhibits 35 and 36 at the end of this panel's oral testimony.]

Senator HART. Oh, they are receiving documents in camera?

Mr. TRIENENS. No they have got 900,000 papers, much of which is proprietary, affects competitive matters. We have not declined to produce anything on a proprietary ground with the FCC. They are regulators, and if they find it in the public interest to put those in the public record—many of these previously labeled proprietaries have been put in the phase 2 public record—that is the FCC's decision. On the other hand, the FCC recognizes it is not in the best interest of either the Bell System or its users to discriminate against it because it is regulated in these proprietary competitive areas, so they have been very careful in weighing whether they would make it a matter of the public record, not to unduly injure the competitive ability of the Bell System and therefore those materials have not been made public, even though they have been furnished to the FCC.

Mr. CROSLAND. Mr. Trienens, excuse me just a moment.

Mr. Chairman, I believe we agreed with you and your committee, at the request of Senator Kennedy, I believe in the hearings last July, that we would submit to this committee under the same terms and conditions the same material that we supplied to the FCC in phase 2. So with that understanding, sir, we will move forward on this, sir.

Mr. HELLERMAN. Thank you.

We have heard much testimony about the necessity for vertical integration. What concerns me, in the steering committee report, is the final report and recommendations on page 11. It says in connection with the Bell Telephone Laboratories:

The general impression exists in the associated companies and the A.T. & T. general departments that the Bell Laboratories are not as responsive to the companies' needs as they should be and are lacking strict controls and budgetary accountability.

Mr. CROSLAND. Mr. Hellerman, we are at somewhat of a disadvantage in not having those documents in front of us to be able to respond to your question. However, Mr. Hough will undertake to do the best he can under the circumstances. Had we known you

were going to question us with regard to these details we would have been better prepared, sir.

Mr. HELLERMAN. We did request these documents from A.T. & T. They were provided by A.T. & T. just recently.

Mr. CROSLAND. There were many others that you requested also, Mr. Hellerman. So we did not bring a truck with us.

Mr. HOUGH. I have no problem answering that question. I have been in the Bell Telephone Laboratories for a good many years; and I have been in operating telephone companies; I have been in A.T. & T. headquarters; and I am now in an operating part of the business.

There are always a lot of requests from the associated companies that cannot be handled. There is a limit to how much in the way of manpower you can devote to these things, and so an educated judgment has to be made as to which activities the Bell Telephone Laboratories and the Western Electric Co. will pursue to the maximum overall benefit of the network and Bell System's service, and there are bound to be those who have pet projects that are not attended to, and in their eyes they may seem more important than they are in the overall scheme of things.

And I would say, if we did not have people who were critical and had their requirements unsatisfied, I would be absolutely sure that we had too fat an organization and were devoting too many people to this effort. An organization that is hungry and always pushing for more, not feeling they have quite enough, is the kind of organization we want; and I think these comments reflect that.

I have no problem with them.

Mr. CHUMBERIS. We have that same problem up here with Senator Hart. Staff men, all of them, have a project to plug and the chairman has to look them over. I guess if he did not get projects from the staff he would be worried about their productivity.

Mr. HOUGH. Right.

Mr. HELLERMAN. We would be interested in seeing those reports because there certainly seem to be many references to Bell Telephone Laboratories not being responsive and not having guidance, which would lead me to question whether or not it would be helpful to have some competitive pressures introduced into the system.

Mr. Crosland, you express concern about wasteful duplication of facilities.

Mr. CROSLAND. Yes, sir.

Mr. HELLERMAN. Is it not true that if additional capacity is required between cities A and B, the Bell System quite commonly builds an additional microwave system to handle the added traffic?

Mr. CROSLAND. We could build many different types of facilities to handle added traffic.

What I had reference to in this point was the fact that in the event there are a number of facilities built by competitors and they are unfilled, I think it would be a waste of natural resources. Now, on the other hand—and I think this would be wasteful to duplicate our facilities that we have there to provide the same service—it would be a waste of natural resources, is what I had in mind, and it would be more costly, I think, to the Nation's telecommunications system.

Mr. HOUGH. I think the other point is, as I mentioned in my statement, we have found ways to substantially increase the capacity of existing systems. Right now in our intercity network we are building relatively few new routes, considering the size of the growth we have to handle. Our old standby, the TD-2 microwave, has gone from 2,400 circuits in the same frequency band to 16,500, and we do this using the same buildings, same antennas, same maintenance personnel. Now, when you build a whole new route to handle 100 circuits between St. Louis and Chicago there is not any question but that is a wasteful duplication of facilities. Those circuits could be handled on the existing routes of the Bell System without any additional construction and handled very readily and with a much lower incremental cost.

Mr. CROSLAND. May I add just another point on this subject, too?

If by any chance these unfilled facilities prevented us from introducing new technology which would in turn reduce the cost to the user, as pointed out by a chart I had earlier, which showed the declining unit cost as a result of the introduction of new technology, and if there were some unused facilities, higher cost facilities, and we were prevented from introducing more efficient millimeter waveguide to which I believe Dr. Baker and Mr. Hough both referred, this would be disastrous, I think, over the long pull.

Mr. TRIENENS. Mr. Chairman, Justice Brandeis in our history has always been thought of as one who was for the free enterprise system, and he had some experience. He practiced before the ICC. He had some experience with regulation. I would like to read a sentence from one of his opinions on this very question. The opinion is in a case called *Newstate Ice Co. v. Leadman*, 285 U.S., and I am reading from page 282:

Experience has taught that the financial burdens incident to unnecessary duplication of facilities are likely to bring high rates and poor service. Their cost is usually dependent upon other things, upon volume and division of possible patronage among competing concerns may so raise the unit cost of operation as to make it impossible to provide adequate service at reasonable rates.

That is an opinion in 1932.

Mr. HELLERMAN. Getting back to the microwave and duplication, is it not true that specialized carriers can build that microwave system for the same cost as Bell, or perhaps even less because the system does not have to function with the integrated part of the switched voice network?

Mr. CROSLAND. The answer is no; but I will let Mr. Hough speak to that, please, sir.

Mr. HOUGH. It depends on what you mean by "microwave system." The true cost is the cost per circuit, and our microwave facility costs are substantially below those specialized common carriers on a cost per circuit basis. Now, sure, you can build a route with a minimum of facilities without protection and so forth, and build at a lower cost. But unless you load that up with a large number of circuits the cost per circuit you provide to the customer is going to be substantially higher, and that is the actual situation today over the routes provided by the specialized carriers. Their rates are lower than ours and their costs are higher than ours.

Mr. HELLERMAN. Does Western Electric and A.T. & T. buy much of the microwave equipment that it uses from the same suppliers that the specialized common carriers buy it from?

Mr. HOUGH. No, sir. We buy some of our order of wire microwave, low-capacity microwave, from other suppliers. There is no other supplier but Western Electric that builds microwave equipment with the capacity of Western Electric microwave equipment.

We cannot get the kind of equipment we need for high capacity routes anyplace else but from Western Electric Co.

Mr. HELLERMAN. Mr. Crosland, I do not seem to be getting to the end of your testimony. Going back to page two, you refer to selective competition as being authorized by the FCC.

Mr. CROSLAND. Yes, sir.

Mr. HELLERMAN. Are you implying there, or do you mean, that there are other areas besides interconnect equipment and intercity transmission into which competition might be introduced?

Mr. CROSLAND. No, sir; not at all. I mean selective competition is just what it connotes. The people who would compete with us, individuals, are motivated by the profit motive, if I may suggest that, and not necessarily service, as we are. And I do not say that in any sanctimonious fashion. But I believe it is true.

Our interest is not a question of our prerogatives or our profits. But our interest is to serve the public. That is the only basis on which we are permitted to exist by the Government of the United States, both local governments as well as the Federal Government, and our objective in life is to serve at the lowest reasonable cost.

Now, what has happened, sir, if we had known that competition was going to be or might be injected into our business, I am very doubtful that our rate structures would be as they are today. You would not have business rates higher, you would not have other rates higher and residence rates low. You would have more cost-oriented rates. You would not have, I would dare say, a 94-percent penetration of the market of households with telephones today, but for that fact.

Now, what happens is that selective competition is where businesses zero in on our weakest points, where we in fact could pull our rates down to compete and to compete well with them. As a matter of fact we could out-compete them in many areas. But our rate structures are not so fixed, and that is our problem today insofar as entry of contrived, selected, or so-called pick-and-choose competition is concerned, and that is exactly what I had in mind.

Mr. HOUGH. We have an obligation to serve everyone, but our competitors do not have that obligation. They pick the places where they want to serve to their own benefits and leave the rest for us.

Mr. HELLERMAN. And the same customers can choose between you and them as well.

Mr. CROSLAND. Mr. Hellerman, the reason is that they chose not to serve these other areas. We chose to serve everyone.

Mr. HELLERMAN. Mr. Hough, in your statement, could you furnish illustrations where the specialized common carriers have failed to modify their own systems to conform to proposed Bell improvements?

Mr. HOUGH. Can I give you illustrations?

No, I cannot. The Commission order ordering us to permit connection into the network is only a few months old and there has not been time for that to develop. The situation is obvious. As we get more and more of these in the network we are no longer free agents to move the technology ahead for the whole network. We have our hands tied. There is not any question about that.

Mr. HELLERMAN. You talk about common ownership facilitating innovation. Mr. Raymond Kraus of Communications Consulting Engineers has made it plain in a report that one-half of Western Electric's current product line of switching equipment is technically obsolete.

Mr. HOUGH. Where are you referring to page 8 here? Now could you tell me what line?

Mr. HELLERMAN. Well, in there somewhere there is a discussion of common ownership and innovation, vertical integration, and so forth.

Mr. HOUGH. Innovation?

Mr. HELLERMAN. Yes.

Mr. HOUGH. I say it makes transfer of ownership as traffic requirements grow routine and possible at net book cost.

Mr. HELLERMAN. Well, I would take it that—

Mr. HOUGH. Oh, I see, you mean sentence that total investment is minimized, innovation facilitated, and network performance optimized.

Mr. HELLERMAN. Yes.

Mr. HOUGH. Well, first of all, whoever made that statement about Western Electric, 50 percent of its products being obsolete, is dead wrong. He does not know what he is talking about. He is completely ignorant of the technology that has gone into the system. I will say so much for that.

Now, as to what I mean by innovation facilitated, frequently, for example, we have to make changes in Denver, in order to effect improvements in service in Kansas City or St. Louis. The network is completely interactive.

Now, if Mountain Bell puts those changes in in Denver, they are compensated for it and through common ownership, whether this equipment is owned by Mountain Bell, or Long Lines, or Southwestern Bell, it all comes out in the long run to the overall benefit of the network, and we do not have to worry very much about who owns what and who gets the return on what. It eliminates all of that scrapping and battling over ownership, and who has to pay a penalty to get started on a new innovation for the benefit of the whole system, all of which is recovered in the long run in the total cost of service overall to the customer.

Mr. HELLERMAN. I do not know Mr. Kraus, but I do know he is a former Bell employee.

Mr. HOUGH. That does not change my opinion. And maybe that is why he is former.

[General laughter.]

Mr. HELLERMAN. No. As I understand it he is a veteran of over 30 years Bell service, and his company employs many former Bell employees.

Turning to domestic satellites just for a moment, if we could, and to domestic satellites and specialized common carriers. How can it be certain that the Long Lines are not given better treatment, better rates by the operating companies?

Mr. HOUGH. Well, first of all, the operating companies do not treat the Long Lines, and they do not give them rates. This, as I indicated before, is a joint partnership in which all revenues are pooled and all expenses are pooled, and the revenues are common, and whatever the costs the associated company incurs, they are reimbursed from the total pool of revenues.

In other words, the associated company has a guarantee of its expenses and the same overall return on its investment as the total interstate rate of return. So it is not what the associated companies do for Long Lines, it is what the associated companies are assured of as a result of their partnership with Long Lines, and I have only mentioned one or two.

Now, when it comes to the specialized common carriers, they do not share revenues and insure returns and recovery of expenses to the associated companies. So this talk about treat the specialized common carriers the same as Long Lines is completely an erroneous conception. The situation in relationship to the operation is completely different.

Mr. HELLERMAN. Would you describe the obligation of the A.T. & T. operating telephone companies to provide connecting links from the point of connection with Long Lines to the premise of a customer located within that operating territory?

Mr. HOUGH. Well, first of all, as I said before, in my summary statement, there is no rigid line of demarcation between the local operating company and Long Lines. We share ownership we share facilities; we jointly use facilities; we operate in the same building. And we jointly provide the service.

The associated company does not provide facilities to Long Lines department. We each provide our share of the facilities required to provide service, and it depends on where that service is as to who provides what. It depends on who has the particular facilities in the area. It is completely a partnership joint operation, joining in the joint provision of service.

Now, the situation with regard to the specialized common carriers is that they are not—and it is expressly stated, they have no desire to and do not intend to be part of a partnership. They want facilities; and by facilities I mean the pairs of wires or the carrier facility required to provide service. Then they take responsibility for the overall end-to-end service. We do not know, either Long Lines or the associated operating company, what goes over that, what the requirements are. We provide them with the facility.

So it is an entirely different thing. They are just not comparable.

The other thing you need to remember is that by far the largest portion of the relationship between the associated companies and Long Lines is for the provision of message telephone service. Approximately 90 percent, 89 percent, of the interstate revenues come from message telephone service plus WATS, which is one the same basic switched network.

Now, this relationship is absolutely essential in order to provide the dialex service, and I will not go over it again as to all of the joint planning and provision of service that is necessary.

Now, it happens that the same facilities that are used for this 90 percent of the business, the same microwave routes, the same cables with local loops in, can be used for private line service, so we also provide private line service, and the customers get the advantage of the economies of scale provided by this much larger proportion of service, and this makes it a contribution to the defrayment of the overall common costs.

And I think we have to be careful that we do not let the tail wag the dog and completely upset this message telephone service in order to satisfy a few special interests on private line service.

Mr. HELLERMAN. What do you mean by the word "upset" as just used?

Mr. HOUGH. Yes; destroy the tremendously important and vital switched message network that is providing the best service in the world at the lowest cost.

Mr. HELLERMAN. You talk of the harms to the nationwide telephone system that would be caused by interconnect systems and specialized carriers.

Has the FCC and the district court in Philadelphia not rejected those allegations as being completely unsupported and without any merit?

Mr. HOUGH. Well, my recollection, subject to correction, is the district court referred this to the FCC and the FCC did have hearings on this and ordered us——

Mr. CROSLAND. No hearings.

Mr. HOUGH. They made a decision. I think we had an oral argument on it, and ordered us to provide these connections. Now, this whole docket 20003 is the full-blown hearing to decide what are the possibilities of damage to the network, economic, technical, and servicewise, and the decision has yet to be rendered on that, but we have been in this business long enough and have had enough experience in the management of this network to be convinced what we say is correct.

Mr. HELLERMAN. One final question. I do not believe it to be your position that Western Electric and the Bell System is the only place where innovation comes from in the communications industry.

Mr. HOUGH. No. I would not say that; but I would say that 99 percent of the fundamental innovations——

Senator HART. Earlier in the day you came all the way.

Mr. HOUGH [continuing]. Comes from the Bell Telephone Laboratories.

Mr. CROSLAND. That is correct.

Mr. HELLERMAN. Well, I guess we have seen one document on data sets. We have heard other statements on modems. We can look at satellite technology by Hughes, lasers by Hughes, crossbar switching by Ericson and Electronic ACDS by Collins and others.

Mr. HOUGH. Well, let me speak of one: crossbar switches by somebody else. The Bell System has had crossbar switches in use long before anyone else in the business. As a matter of fact, there are

very, very few crossbar switches in use around the world other than in Bell Canada and in the Bell System, and, as a matter of fact, for many years the only place you could obtain crossbar switches was from Western Electric. The Rochester Telephone Co., an independent telephone company, purchased crossbars from the Bell System because it was the only place you could get them. The 4-A switch, the largest toll switch in the world, fundamental to our ability to manage the network and operate with the efficiency, has been produced by Western Electric for many years. I forget the exact number of years, but it was probably at least 30 years. You cannot buy a switch of that capacity anyplace else in the world, and yet we are about to come up, as Dr. Baker spoke, with a new electronic toll switcher with three times the capacity and one-sixth of the floor space. No place in the world is that available.

I mentioned no place in the world can you get microwave systems with the capacity coming out of Western Electric.

Now, when you talk of terminal devices, such as data sets, that is not the real heart of innovation. That is the putting together of someone else's innovation into a product for sale. That is the sort of thing that Dr. Baker, in his statement, was contrasting with the fundamental pushing forward of new knowledge and applying it to the network, and when you come to the real fundamentals of innovation, the things that make this network possible in the form and the economy it now has, these come out of the Bell System, and if we did not have this overall integrated network and vertical integration these major developments would not occur.

Who else would do it? Look outside. No one else is doing it. No one is developing L-5 and wave guide No. 4 ESS, No. 1 ESS of which we install a new one every 1½ days in the Bell System. It has greater capacity and ability than any electronic switch in the world.

Now, you talk about innovation on the periphery of the system and things that are really in the area of basic, straightforward product development, not much innovation there.

Mr. CROSLAND. Mr. Hellerman, if I may say without denigrating any expertise he may have in these other areas in electronics, practically every item you mentioned a moment ago, I think it is fair to say that Bell Laboratories has pioneered and as part of its activities. I think Dr. Baker will bear me out.

Satellites, for example, they came right out of the Bell Laboratories. We spent over \$50 million in developing satellites. As a matter of fact, the first satellite, as you remember, was Telstar, and we were very proud of the fact that we did develop satellite communications. Practically everything you mentioned came out of the Bell Laboratories or were based on their inventions.

Mr. HELLERMAN. But not including electronic ACD's.

Mr. HOUGH. Yes. The technology there has come right out of the Bell Laboratories.

Mr. HELLERMAN. The technology but not the product.

Mr. HOUGH. Well, you can put the technology together in a lot of ways.

Mr. CROSLAND. Sure.

Mr. HOUGH. You will find that the electronic ACD is based on Bell Laboratories patents.

Mr. HELLERMAN. Well, in the report, "Interconnection and Competition," by John R. Brown, sales engineer for Southern New England Telephone Co., talking about future needs, he says, "In the future we must know what products our customers want. We ought not to develop products and then create a market."

I think the innovation and the introduction of new products coming out is to meet the demands of the users.

Mr. HOUGH. That is our only reason for being in business.

Mr. CROSLAND. We agree with that.

Mr. HOUGH. It is what we have done for years.

Mr. HELLERMAN. And that is the purpose that these competitors are in business. Would you agree to that?

Mr. CROSLAND. No, sir.

Mr. HOUGH. No, sir. Their objective is not to meet the Nation's requirements for overall communications, sir. Their objective is to sell equipment and to make a profit, and there is nothing wrong with that.

Mr. CROSLAND. We are not quarreling with that.

Mr. HOUGH. It should not be at the expense of the viability of a nationwide network.

Mr. CROSLAND. Or at the expense of the consumer.

Mr. HELLERMAN. Thank you very much, Mr. Chairman. I have no more questions.

Mr. CHUMBRIS. Just for the record, it has been pointed out previously in the record that A.T. & T. and its subsidiaries' patents have been made available for use by many people in many industries.

Would you state for the record again, so that it would be clear, how or why did you make those patents available to whoever asked for those patents?

Mr. HOUGH. Well, first of all we are in the business of providing telephone service, not in the business of trying to sell our patents on the outside as a profitable venture for the Bell System. And to the extent that things have come out of the Bell Laboratories can be made available at reasonable cost to others to be used in other products for the benefit of the country—transistor radios, pocket computers, and things like that—we think it is in the public interest.

Now, beyond that, the Bell Telephone Laboratories patents are an important asset from the standpoint of trading. To the extent that we have a patent position that is attractive to other companies, we have the ability to make use, through patent agreements, to make use of patents that they may have. So, it is important from that standpoint.

Also, in 1956, of course, one of the provisions of the final judgment was that patents available up to that time should be—patents in existence up to that time should be made available to those who wished them at no charge; and beyond that, at reasonable charge. And that is our policy.

Mr. CHUMBRIS. Thank you very much.

Thank you, Mr. Chairman.

Senator HART. Well, now, I know it has been a long day, and I am sure you would be offended if I announced out of the blue some conclusions, so I certainly will not. It will be slow reading for me and others on the subcommittee to go through the material we have assembled. But I want to express our appreciation to all of you for a thorough and responsive preparation.

I have some irrelevant notes here, and if I get through them, it may indicate an attitude which I want in advance to assure you I do not have. Some of them are, in a sense, critical, but I would hope, while the reader of the record may not sense it, that you will sense from the style in which they are made that they are in an effort to wind up a very long day on a less serious note than much of the testimony.

I am not at all familiar with the telephone business. I am more familiar with the automobile manufacturing hierarchy of the country, and I know and understand and sympathize with their reaction when an outsider undertakes, as they would put it, with no background or experience to inquire whether they could be made more effective. They know, they have a deep conviction, that "My God, the car is the greatest symbol of America, and this is heresy. We have put together an incredibly effective production system, and here are these idiots, including politicians occasionally, who seem to be suggesting that maybe if you look at it again it could be made even more effective."

I would understand if you have the same kind of reaction toward any inquiry about communications, although you are older hands at the intrusion of Government into your business than automobile-makers are. The one note that has been constant in our hearing today is your intense loyalty and strong belief in the Bell System. And that is the way it should be. If I had grown up in that company, I hope that is the way I would feel. It would reflect experiences, but experiences color perception, too: that is true of everybody, no matter what you are doing.

And in addition, when we talk as we are here, of restructuring a magnificent system, there is not only the feeling, to return to the automakers, what was good for General Motors was good for the country. We all feel that about whatever the thing is that we are doing. There is that, plus the fear, the uncertainty of the unknown—although counsel would say we know what we are getting into if we restructure. We are getting into railroads.

But there is the double dip of deep loyalty, a strong conviction that you have put together a system that no other nation can match; add to it the fear of what a new blueprint would produce. I know exactly how you feel. And my comments are not meant to be critical.

I have a feeling that there is sort of a hierarchy of establishments in the Bell System which is in many respects good, too. But, I would be curious as to whether you, whether a fellow that does not wear a tie and does not salute the flag every morning really survives in that system.

And the final note is that you have a strong belief that your motive is service. But when you go to an annual stockholders meeting, there must be something else to all that. There is not just those

outsiders that are trying to get into the business that have a profit motive. There is nothing wrong with acknowledging it. There must be a strong profit motive in defending this system.

Well, that does not mean anything. As I say, at the end of a long day, those are just casual observations.

Mr. CROSLAND. Mr. Chairman, may I express to you our gratitude for your permitting us to be here today. We are advocates of the system of the approach of the Bell System. We do recognize that good service is the best defense against governmental intrusion. At the same time, we accept and are willing to accept governmental investigation into our business such as you have conducted here.

Being advocates, I would hope that you can accept as being truths at least 75 to 80 percent of what we have said. And if you accept that, I think you will come to realize that the destruction of the structure of the Bell System or the injection of competition into the telecommunications business will not be in the best interest of the users.

This is what the law has provided; it has been recognized for a long period of time. We have operated under that system; our rates structures are formed under that system. We think it has been in the best interest of users. And so we implore you, sir, we think that our approach to this matter is not a selfish one, but is motivated because of service to the public.

Senator HART. I accept everything you say as truth as you see it. I have no doubt about that, as I said. Our perceptions are sometimes colored by our experience.

Mr. CROSLAND. I appreciate that, sir.

Senator HART. And to wind up, literally, on an informal note, I was thumbing through Dr. Baker's prepared statement at the end where he talks about the wired city and all of these amplifiers and cycle ranges and social nerve network built less-than-hair-thick conductors of light, biology of medicine, diagnostics, and the human system.

Do you believe that the day will come when there will be machines that can know my thoughts?

Mr. BAKER. No, sir. We aspire to quality, but I do not think our quality will quite reach that height. It will, however, attempt to transmit your thoughts with fidelity, and that is our real objective.

Senator HART. Do you believe that there will soon be devices that perhaps may not read my thoughts but can hear my speech, even in my most private conversations?

Mr. BAKER. I do not believe so, sir, in that we know quite accurately the parameters of human speech and acoustics. And, if I understand you right, you mean that if you were privately conversing in some secluded place, is there some machine that would penetrate that environ. And the answer is no, indeed.

We have high sensitivity and high fidelity for transmission, for picking up the voice or other signals when it is desired, but the very same knowledge which permits that capability tells us that human communications are not controllable events. There seems little doubt that privacy, the isolation of the individual, will be assured.

Senator HART. Well, that is a very reassuring note on which to adjourn.

Mr. CROSLAND. Thank you, Mr. Chairman.

[Whereupon, at 5 p.m., the subcommittee was adjourned, subject to the call of the Chair.]

[The following was received for the record:]

MATERIAL RELATING TO THE TESTIMONY OF MESSRS. BAKER, CROSLAND, FLETCHER, HOUGH, AND TRIENENS

EXHIBIT 1.—*Prepared Statement of Howard W. Johnson*

PREPARED STATEMENT OF HOWARD W. JOHNSON ON BEHALF OF
AMERICAN TELEPHONE & TELEGRAPH CO.

Present Title: Chairman of the Corporation, Mass. Institute of Technology—Has held this position since July, 1971.

1959-1966—Professor & Dean, Alfred P. Sloan School of Management, Mass. Institute of Technology.

1966-1971—President—Mass. Institute of Technology.

Current Directorships: Federated Department Stores, Inc.; E. I. duPont de Nemours & Company; John Hancock Mutual Life Ins. Co.; Morgan Guaranty Trust Co. of N.Y.; Champion International Corporation.

Trusteeships: Wellesley College; Radcliffe College; The Institute for Defense & Analyses; Aspen Institute for Humanistic Studies; Woods Hole Oceanographic Institution; Museum of Fine Arts, Boston.

Other Current Positions: Chairman, Environmental Studies Board of the National Academy of Sciences and the National Academy of Engineering. Fellow, American Assn. for the Advancement of Science. Fellow, American Academy of Arts & Sciences.

Recipient of numerous honorary Doctorates: Former Board Chairman of the Federal Reserve Bank, Boston. Former Member of the President's Advisory Committee on Labor-Management Policy. Former Member of the National Manpower Advisory Committee.

AN ASSESSMENT OF THE ORGANIZATIONAL EFFECTIVENESS OF THE BELL SYSTEM
AND ITS MAJOR PARTS WITH SPECIAL REFERENCE TO THE QUESTION OF POSSIBLE
DIVESTMENT

(Howard W. Johnson; Massachusetts Institute of Technology)

Over a period of several months I have had an opportunity to review and study the functioning of the relationships within the Bell system among the operating companies, Bell Laboratories, and Western Electric. I have sought to examine the quality and performance of these interrelationships within the Bell system with an eye to answering the following questions:

(1) Does the functional relationship of the three parts of the system contribute in major ways to the quality of this system in terms of performance for its customers?

(2) Could an equivalent or superior performance be achieved by other forms of organizing communication services for our country, for example, by requiring the divestiture of Western Electric or Bell Laboratories or both organizations?

On the basis of my study, and within the limitations of my experience and insight into industrial organization, my answer to the first question is affirmative; that is, the functional relationships to the system do contribute in major ways to the quality of performance for its customers and for the country as a whole.

My conclusion on the second question is that it is unlikely that equivalent or superior performance could be achieved by other forms of organizing communication services and that the risks involved in divestiture of major arms of the system would likely make such action against the public interest.

Method of the Study

I undertook this review at the suggestion originally of a fellow member of the M.I.T. Corporation, who is now the retired Chairman of Bell Laboratories. Over the 25 years since I worked on a Master's thesis on labor relationships within the Bell system, I had maintained a student's interest in the workings of the telephone communication system in the country. The invitation

seemed a logical extension of that interest. Conversations with officers of the Bell Laboratories and Western Electric indicated to me that my review would be a wholly independent one, that I could see any installation, talk and discuss matters with any personnel that I would choose to see, and that I would be provided any material that I required.

In the course of the winter of 1973-1974, I visited and toured several installations of the Bell Laboratories and Western Electric in three parts of the country. I had substantive conversations and discussions with about 75 managers within the laboratories, Western Electric, and the operating companies. I discussed concepts of organization with the chief executives of Western Electric, Bell Laboratories, one operating company, and AT&T. This study was not meant to be an exhaustive one. It was rather an impressionistic review against a background of looking at managerial and organizational relationships in several other segments of industry.

Let me mention here, parenthetically, a bias that I brought to the study. It is a bias for competition in free markets and against administered market relationships. I was prepared, in short, to be highly critical of practices leaning toward large-scale integration as tending to work against the consumer. I found that, while I believe the general case still holds, given the requirements of this industry, large-scale integration provides a performance advantage for the consumer. In other words, my conclusions on the basis of what I saw in this industry ran counter to my bias.

Observations

The characteristics of this industry have been discussed in the past. I wanted to look at them afresh. It is a regulated industry, marked by tremendous complexity. It must operate continuously with high reliability and with internal compatibility of devices and equipment. It is an industry marked by rapidly changing an devolving technology with the crowning requirement that, while technological changes are developed and introduced, the whole system, old and new, must continue to operate in an interconnected fashion. Telephony as an industry began nearly a hundred years ago, but technical developments are continuous and indeed accelerating. Fundamental problems of the science and art remain unsolved: old technology becomes less efficient. For example, the crowded cables underneath the street's surface become obsolete because of increased service requirements. Entirely new devices such as the use of optical fibers for carrying communication signals need to be invented, financed, developed, manufactured, and installed.

I would especially emphasize the requirements of reliability. Few industries have such a heavy emphasis on making sure the "weakest link" has a high threshold against failure. All of this emphasizes the need for system. System, as we know it now in management theory, is a requirement that all parts work effectively under all conditions at least long-run cost; human, technical, financial, and market. In the communication services, I observed a very effective integration of such system with the added overlay of rapid technological development. In most businesses the integration is best achieved by multiple, independent, competitive point sources. I concluded that the communication service business would not be so served.

The integrated system produced by the operating companies in close connection with research, development, and manufacturing seems to produce effective overall performance. Such integration requires a service view that is hard to appreciate except at close examination. It is difficult to think of an analogous industry. The whole, in the case at hand, is greater than the sum of the parts. In assessing the performance of organizations, one can usually state that competition in most industries provides a basis for comparison. In this industry that is not a reliable basis. One can proceed therefore on an input or on an output basis. The judgments are notably more subjective, but perhaps no less reliable when carefully done, than reviewing the rough results of competition in a free market.

In terms of what I have called inputs, I would make the following observations.

The quality of management personnel is high—on an observational basis as high as other high-performance industries. I base my judgment on observing management personnel of all ranks involved in executive programs over twenty years, and my assessment of those with whom I spoke during the current review. There was an exceptional sense of awareness and concern with goals and meeting difficult schedules and deadlines. There was a sense

of urgency in performance; there was a sense of cost and economic requirement; and there was a sense of high standard of personal performance. I was impressed by scores of statements, necessarily anecdotal in nature, and actions that would support my conclusion as to the quality of system management effort. There was a notable responsiveness to emergency and to providing service under all conditions. Most important, there was a sense of dynamic tension within the three organizational structures and at the margins where they intersect that produces good results. I noted a sense of dissatisfaction with the status quo, which is healthy. There was constant reference to inter-relationships and interdependence, especially between the Bell Laboratories and Western Electric. This latter is especially important in considering whether either of the two organizations can be effectively divested. I concluded that there was much gain in the ready connection and productive tension between these two arms.

A special word should be added here in connection with the Bell Laboratories. This organization in its basic and applied areas compares very favorably in the areas of its specialties with the best science and engineering research organizations within universities in the country. Some of its members are constantly and actively recruited by the best physics and electrical engineering departments in the country. It consistently attracts among the best young researchers to its bottom ranks, I would place it first among the industrial research groups, and there are few close competitors. It probably would not survive at that level independent of the whole system.

In terms of outputs, the data is somewhat more quantitative, but no more, I fear, "scientific." I would mention three points. First, there are widely developed internal sets of indices of performance that are well known and actively worked toward and against across the system. The internal sets of standards are not perhaps as good as external competitive sets, but they are very useful. I concluded that they functioned well for the system. Second, I sought to check actual price-cost data against competitive devices. Western Electric provided many cases of such comparison for me. The results were uniformly favorable to the performance of Western Electric. Finally, I tried to take a "macroperformance" look by comparing the U.S. telephone system to its counterparts internationally. With the possible exception of the Scandinavian countries, there were no close competitors in cost and performance and surely not in scale.

I concluded on the basis of these "input" and "output" measurements that there were decided system advantages to the operation of the Bell system and its three component structures as it stands. It is performing exceedingly well.

The question remains would it perform as well with either or both of the laboratories or Western Electric divested. We cannot know the answer for certain. There are no models outside the country that provide guidance in the affirmative. All indications are that the present system performs exceedingly well at the level of the relationship I have described. I conclude that it would be risky in the public interest to experiment with divestment. Once broken, the system would not be easily rejoined. Competitive advantages to the terminal customer that may exist at the purchase of equipment or special service level clearly do not exist at the level of integrating research, development, manufacture and operating functions of the major system. Note that I have passed no judgment on the question of whether consumers are served by being able to buy special service or special equipment from other sources than the Bell system. I did not study that question and do not have a considered opinion on that issue. But on the issue of the overall integration of the three major structures of the system I have a conviction, and I have tried to state it clearly in my responses here.

EXHIBIT 2.—*Prepared Statement of Dr. J. M. Brown*

PREPARED STATEMENT OF DR. J. M. BROWN, VICE PRESIDENT, WESTERN ELECTRIC CO., INC., ON BEHALF OF THE BELL SYSTEM

I. QUALIFICATIONS

My name is John M. Brown. I am vice president, Customer Planning Division of the Western Electric Company with offices at 222 Broadway, New York City.

I have responsibility for various planning functions and the pricing of products and services sold to the Bell Telephone Companies.

My educational background includes a Bachelor of Science degree in electrical engineering from Purdue University in 1946, a Master of Science degree

in engineering from Stevens Institute of Technology in 1950 and a Doctorate in business administration from New York University's Graduate School of Business Administration in 1955.

I have been employed by the Western Electric Company since 1946 and have held positions covering many facets of the Company's activities including engineering, manufacturing, distribution and installation activities. I assumed my present position in 1972.

II. PURPOSE

The purpose of this statement is to describe Western's accounting, costing, and pricing policies; the uniform application of these policies to all of its products; the use by Western of accepted and widely used accounting procedures; their resultant accurate reflection of Western's costs and expenses, and the continuing broad public scrutiny of Western's prices and profits by various governmental agencies. This statement demonstrates that the prices of Western's products to the Bell Operating Companies properly and accurately reflect its costs.

More specifically, this statement addresses the question whether Western's prices, for its more competitive items, are priced at unreasonable levels not justified by their costs.

The answer to this question requires familiarity with the entire public record as to Western's accounting, costing and pricing principles. This statement will demonstrate that:

1. Western's outstanding cost and price performance is not new and is a matter of historical record;
2. Western's cost and pricing procedures are not unique to it;
3. Western's standard cost system assures accurate costing, effective management control, and a firm basis for Western's prices;
4. Western's standard costs are uniformly developed and applied to all products, i.e., the one system applies to all products;
5. Western's accounting system follows widely accepted industry practices;
6. Western's accounting system is subject to continuing regulatory scrutiny;
7. Western's accounting system provides a sound basis for determining product costs, as found by judicial and regulatory review;
8. Western's prices are cost related, are based upon sound pricing principles and result in prices which properly reflect Western's costs;
9. Western's prices are established solely by Western and are designed to achieve reasonable profit uniformity among product lines.

III. BACKGROUND

Western Electric manufactures and purchases telecommunications products, and engineers, manufactures and installs complex equipment, such as switching systems, that must be tailored to specific needs of the individual Bell Telephone Company location.

At its plants, located in the United States, Western manufactures almost 100,000 different types of apparatus and equipment.

These activities are conducted with recognition that Western must stand ready to meet the demands made upon it by the Operating Telephone Companies with the very best quality, and service performance it can deliver at the lowest possible price, while still earning a reasonable return on investment. Of course, as has been shown by prior testimony of the Bell System before this Subcommittee, the Telephone Companies are under no obligation to buy from Western Electric. In fact, as has been previously shown to this Subcommittee, they purchase substantial amounts of other manufacturers' products and services.

IV. NEED FOR SOUND PRICING AND COSTING

As was demonstrated by Mr. Fletcher¹ before this Subcommittee, and the Bell System's supplemental statement, filed with this Subcommittee, Western's performance has been excellent in terms of productivity, low prices and reasonableness of earnings. This superior performance would not have been possible without a sound and accurate costing system which allows Western to properly identify and monitor its costs, and accurately reflect its costs in price.

Accurate costs are vital to Western's effective performance since they provide the basis for measuring operating efficiency; accounting transactions;

¹ August 2, 1973 Hearings of Senate Subcommittee on Antitrust and Monopoly.

evaluation of inventories; managerial control; preparation of the Company's financial reports; and pricing. Western's accounting practices conform with those followed by other manufacturers and specifically recommended for the electrical manufacturing industry by the National Electrical Manufacturers Association.

Western's costing system underlies its management's ability to manage the business on a sound basis. Traditionally, Western's managers responsible for production at each of Western's plants are evaluated on their ability to meet, and if possible, better the standard or "should take" costs established for each of Western's products at an efficient level of operation. As a result they have a direct interest in assuring that standard costs which they are responsible for meeting are reasonable and accurate, while Divisional and Headquarters management is vitally interested in assuring that standard costs represent demanding but fair objectives. For example, the labor hours used as the basis for wage incentive payments to production workers are the same labor hours included in the calculation of standard cost. Any arbitrary reduction in labor hours not warranted by a change in the manufacturing process would invite union resistance.

V. WESTERN'S LOW COSTS AND PRICES NOT NEW

Western's low prices are not a new phenomenon—they have been shown to be substantially lower in the aggregate than the lowest prices for comparable products available from the general trade for almost 50 years. As Mr. Fletcher demonstrated in his statement before this Subcommittee, current comparisons continue to show a substantial price advantage in favor of Western for all product categories.

A. Western's Standard Cost System is Not New or Unique.

Standard cost systems are used generally throughout industry, and are recognized as the optimum accounting technique for use by a multi-product manufacturing company. Western has used this recognized costing procedure for almost 60 years and it has been continually improved to take advantage of the most modern accounting and computer techniques to insure accurate calculation of cost for each product.

The use of computers has enabled Western to shorten the time frame for cost compilation, thereby permitting more current cost data to be used. Computer utilization also provides for uniformity in the compilation of costs, lower accounting costs and improved accuracy.

Similarly, the use of predetermined elemental time standards on which individual standard costs are based is not new nor recently adopted. These time standards are based on industrial engineering analysis of basic worker movements required for each operation of the production process. They have been in use by Western for some 25 years. Similar work measurement systems are used by other manufacturers.

VI. STANDARD COST AS A MANAGEMENT TOOL

The standard cost system provides a low cost, efficient and fast reporting management tool. Because of the varied purposes for which the standard cost system is used, it is vitally important that standard costs be readily available and as accurate as possible. Standard costs are used:

1. For current accounting transactions and evaluation of inventories;
2. For effective managerial control of operations, planning, and performance;
3. For establishing prices, and,
4. For preparing Western's financial reports.

VII. DEVELOPMENT OF STANDARD COST

As seen on Attachment "A," Western's standard costs reflect inputs from numerous functionally independent organizations. Using Bell Telephone Laboratories design information, Western Product Engineering Control Centers determine the types and quantities of material required, and provide detailed product design specifications. With this information, manufacturing engineers prepare the manufacturing layout. This is the basic document used by the shop in manufacturing the product; by the industrial engineer in determining labor hours and labor wage incentive allowances; and by Comptrollers in compiling standard costs.

The standard cost system we use for manufactured products is the sum of three elements—material, labor and overhead.

Material.—For each standard cost, specific quantities and types of material required are predetermined through detailed engineering analyses. This data is obtained from the aforementioned manufacturing layouts or drawings. These manufacturing layouts are issued by our engineering organization, which is responsible for assuring efficient manufacturing processes. These layouts provide, operation by operation, the manufacturing steps required for product manufacture as well as the quantity and type of material required for each operation. Standard values for the material used are established based on estimates of raw material costs. These estimates are supported by the Purchasing and Economics Organizations' views of prices we will have to pay suppliers for such materials.

Labor.—The standard hours required to make each part are obtained from wage incentive data prepared by Western's Industrial Engineering Organization, which has the responsibility of assigning tight but fair standards of efficiency. This wage incentive data is engineering time standard information developed for operations performed and used for incentive payments to our hourly employees as well as for standard cost compilation and efficiency measurement. Therefore, unreasonably low standards would not only result in union grievances, as indicated previously, but destroy these standards as a tool for measuring efficiency.

The standard labor cost is then developed by multiplying the time required to do the job (standard hours) by a standard labor costing rate. This labor costing rate includes the wages paid to direct labor personnel. In addition to the standard hourly rate paid to employees for work which advances the stage of manufacture, the cost also includes wage incentive allowances as well as the cost of such items as vacations, holidays, sickness and absence payments, and overtime premiums. The total standard labor costing rates also include costs for such items as pensions, social security, death benefits and insurance applicable to direct employees.

Overhead.—Overhead expense is the third element of standard cost. To distribute an appropriate share of overhead expense to each product, expenses required to meet the expected volume level are forecasted. These expenses include clerical and local management salaries, supplies, repairs, maintenance, taxes, insurance, and depreciation. To assign these expenses properly to each product, cost areas within each shop, known as costing centers, are developed and defined, such as cable insulating or covering, relay assembly, microwave testing, test set assembly, and piece part forming. More than 1,000 such costing centers have been established, assuring the accurate assessment of such costs to the product output of each cost center. The number of these costing centers has increased a hundred-fold since 1940.

Compilation of Standard Costs.—The basic data used in this compilation are approved by the Company Comptroller. A Cost Studies Organization, which reports to him, is charged with the responsibility of assuring that costs are compiled in accordance with Corporate Instructions. In addition, Western's internal Auditing Organization audits both standard costing procedures and compilations.

Each location computes its own labor and overhead rates. These rates are then submitted to Divisional Staffs and the Headquarters Cost Studies Organization for review and approval. Each individual rate is analyzed and compared with the previous rates to determine both the reasonableness of the various expenses and their proper allocation to individual labor and overhead centers.

After the Comptroller's Organization has approved the labor and overhead rates, the manufacturing locations use them in computing standard costs.

Standard Costs Facilitate Cost Control.—Western's standard cost system has consistently proved its worth in cost identification, cost control and establishment of prices. The management consulting firm of McKinsey & Co. noted in *A Study of Western Electric Performance* that, . . . "Western's well-developed cost measuring and control system is an important force behind its steadily improving cost trends. The standard cost system used by Western Electric focuses attention at all management levels on the most important elements of manufacturing cost and, without incurring excessive accounting costs, points up the areas in which action must be taken to bring about improvement." (p.42) Our manufacturing managers are measured by how they perform against these standards. That this superior cost performance has been reflected in the prices to the Bell Telephone Companies was demonstrated in Mr. Fletcher's testimony before this Subcommittee which showed that,

"Western's prices for its products are 60 to 80 percent of similar telecommunications products available from the general trade."

Updating Standard Costs.—All standard costs are generally revised every two years on manufactured products to assure that they reflect current conditions. When significant changes in the cost to produce a particular product occur within the two-year period, the standard cost is revised in accordance with Corporate Instructions.

In addition to use for manufactured products, annual standard costs are also developed for the services Western performs, such as Systems Equipment Engineering and Installation.

Standard Cost of an Item in the Same in all Products.—The standard cost of apparatus and equipment is the same in all products in which they are used. For example, the standard cost of a specific wire spring relay is the same whether used in the 770 PBX or used in a No. 5 Crossbar Central Office. All Western's products using common components and manufacturing processes are costed on a consistent, non-discriminatory basis.

VIII. ASSIGNMENT OF OTHER COSTS

In addition to the standard cost of a product, other costs reflected in Western's prices include forecasted variations between the standard and the incurred cost of manufacture (both operating and non-operating), development expense, merchandising expense, general expense, income taxes and a return on investment.

As an integral part of managing its business, Western computes and reports profits and return on investment on Bell business by principal lines of product. Western's product lines have evolved over the years and are designed so that product groupings reflect product homogeneity within each product line. The purpose is to insure that the price of a product properly reflects its costs. The use of a product line structure for cost assignment is consistent with the approach used by multi-product companies in industry generally. Assignment of costs and expenses to product lines are generally made by the various organizations throughout the Company which have incurred the costs, on the basis of generally accepted accounting procedures as set forth in detailed Company Instructions.

IX. WESTERN'S ACCOUNTING SYSTEM FOLLOWS ACCEPTED PROCEDURES

Procedures, which employ specific assignment of cost wherever possible, and proration on various appropriate bases when necessary, have been developed for each element of cost, expense and investment to provide an accurate determination of results by product lines. These procedures applied in meticulous detail for both actual and forecasted results, with the actual results audited and approved by a leading certified public accounting firm, Arthur Young and Company. A copy of the 1973 certification is shown in Attachment "B." Arthur Young and Company has also consistently found that Western's accounting procedures meet the requirements stated in the Final Judgment of the United States District Court for the District of New Jersey in Civil Action No. 17-49, ordering Western "to maintain cost accounting principles as may be generally accepted and that afford a valid basis, taking into account the magnitude and complexity of the manufacturing operations involved, for determining the cost to Western of equipment sold to AT&T and Bell Operating Companies for use by them in furnishing common carrier communications services."

Obviously, the allegations made in these hearings that Western's cost accounting procedures are unsupported in fact. Similarly, the assertion that Western is lumping competitive PBX's with large non-competitive central office equipment and, therefore, is in a position to cross-subsidize the competitive PBX's, is also erroneous. In any event, since January, 1974, PBX's are being grouped with other customer premise products which do not include any central office equipment.

X. RECOVERY OF DEVELOPMENT COSTS

To facilitate innovation and to provide the Bell System with the telecommunications products it requires for rendering improved and more economical service, Western has traditionally supported a continuing forward-looking program of research and development. Western charges these costs as an expense rather than capitalizing them. This is the accepted accounting treatment in industry.

The reasonableness of these procedures is evidenced by the American Institute of CPA's recently published *Accounting Research Study No. 14, Accounting for Research and Development Expenditures*. This study specifically shows, for both mature and more recently formed companies, that research and development costs are properly assessed against current revenues.

Moreover, the Financial Accounting Standards Board has proposed, effective January 1, 1975, that companies charge off research and development expenses as incurred rather than write them off against future sales revenues (Attachment C).

Western's method of development recovery by product line recognizes that technology has broad impact and cannot be pigeonholed. The development on one product often makes an important contribution to another product. A comprehensive development program inevitably results in cross-fertilization of benefits and ideas among products which no separate, product-by-product accounting could measure or reflect. Over the years this has been the pervasive and continuing characteristic of the results of Bell Laboratories' and Western R&D effort. This effort involves a continuing interchange of ideas and developments among products that can benefit from them, and among scientists and engineers working on different products with similar or related technological problems. Consequently, R&D costs are assessed first to broad categories of effort and then to product lines on a proportionate basis for the purpose of recovery in the prices of products.

XI. REGULATORY REVIEW

Unlike other manufacturers, Western's prices and profits have been under regulatory scrutiny for many years.

Scores of interviews relating to Western's costing and pricing practices and policies have been held between both the FCC and state regulatory representatives, and Western Electric, supplemented by the provision of thousands of pages of documents.

In addition, no company has disclosed as much information, publicly, as Western has in such a sensitive area. Moreover, no other manufacturer's costs, prices and profits have been subject to such continuous and previously regulatory and governmental scrutiny over a period of 50 years.

A. Western's Accounting System Accurately Shows Costs of Western's Products, as Found by Judicial and Regulatory Reviews

Western Electric's corporate results are reported in great detail to the NARUC-FCC Staff Subcommittee on Manufacturing and Service Affiliates. Extensive accounting and pricing data is furnished by Western annually for their review and analysis. This is supplemented periodically with 10-year editions which provide exhaustive data on all facets of Western's operations.

The 1973 report of this NARUC-FCC Committee, dated October 2, 1973, stated as follows:

"Acting through our Staff Subcommittee and its Subcommittee on Telephone Manufacturing and Service Affiliates, your Committee continued its long-established practice of reviewing, compiling and issuing quarterly and annual reports on the operations and fiscal data of the Western Electric Company. These were distributed to the Association membership in June. As before, *they present a very complete and clear picture of the results of Western Electric's operations.*" [Emphasis added]

The Kansas Supreme Court, in *Southwestern Bell Telephone Company v. Kansas State Corp. Commission*, 169 Kan 457 (1950), after observing that the District Court painstakingly examined the evidence before it, affirmed and adopted the following finding of fact by the District Court Judge:

"The methods followed and the apportionments and computations made in determining the costs to Western of services, materials and commodities furnished to applicant (Southwestern Bell) as shown by Applicant's evidence herein, were in accordance with accepted cost accounting procedures and *produced the most accurate statement of actual cost to Western of such services, materials and commodities which it was possible to make.*" [Emphasis added]

"25. The evidence introduced by Applicant in this case constituted a statement of the actual cost to Applicant's affiliates (Western) of services, materials and commodities furnished by them to Applicant . . ."

XII. PRICE POLICY

Western's price policy is consistent with its role as the manufacturing and supply unit for the Bell System. The Standard Supply Contract, which West-

ern has with each Bell Telephone Company, requires that Western's prices be uniform to all Bell customers for like materials and services under comparable conditions. Accordingly, Western does not have the flexibility that many other companies have, with respect to specific transactions, to raise or lower the price of its product to meet a particular competitive situation.

Moreover, Western's prices are cost-related. Western does not seek to maximize its profits by charging whatever the market will bear. It does not use the pricing mechanism to influence or control Telephone Company procurement decisions to its own advantage. Thus, where demand outstrips production, Western seeks to increase its output and will not increase prices and profits in order to take advantage of increased demand, or to stifle such demand, which could negatively impact on Telephone Company service. Similarly, if Western's price for a product exceeds that of another's product, it does not arbitrarily reduce its price. Price movements are based upon cost changes.

It is also Western's price policy—and has been for decades—to set the lowest prices which will recover costs that will be incurred for its output of products and services in the pricing period, and provide a reasonable return on the investment involved. It is also Western's objective, first, to maintain substantially uniform rates of return on each of its product lines, and second, to keep individual product prices relatively stable. In achieving this end, Western's practice is to develop price factors for each product line, for general application to the standard costs of the products comprising the line. These costs and prices are determined by Western independently of the Telephone Companies. The same costing and pricing policies and procedures are followed by Western regardless of whether a product is for use by the Telephone Company to provide a competitive service or not.

This long-standing price policy insures that the benefits of Western's efficiency and cost reduction, as well as Bell Laboratories new product designs, are passed on to the Telephone Companies in the form of improved products at the lowest possible prices which properly reflect their costs. Western's policy of cost-based prices and uniform rates of return assures that Telephone Company decisions in deciding between alternative types of equipment are not distorted by Western's pricing decisions. Furthermore, it assures that Western's rate of return on investment from the sales to individual telephone companies will be generally the same regardless of the mix of products sold.

Attachment "D" shows the return on investment by product lines earned by Western on sales to Bell Companies from 1946 to 1973.

The costing and pricing functions are separate, and stringent controls are exercised to insure that corporate policies and procedures are strictly adhered to. Forecasted cost data is compiled by the Comptroller's Organization in total and by product line and submitted to the Pricing Organization for use in establishing prices. This cost data, as previously indicated, is based upon input of the organizations that are responsible for meeting these cost objectives.

It is not Western's policy to charge higher prices on one product to make up for a price decrease or lower profit objective on another product. It is our policy to establish prices on all products, both new or existing, that will recover anticipated costs and provide a reasonable return on the investment involved.

As previously noted, Western's prices are substantially below the prices of similar telecommunications products available from the general trade. In cases, however, when an alternative product is available from the general trade at a lower price, Western does not reduce its price except when justified by reduced cost.

XIII. PRICE PROCEDURES

As noted previously, the starting point in the establishment of a price is the standard cost of the item. In setting its prices, Western plans to recover the other expected expenses of running its business, including variations between the standard cost and incurred cost, research and development expenses, merchandising expenses, general expenses, and income taxes, as a reasonable return on its investment.

These costs are associated with the appropriate product line through periodic detailed forecasts which are made by the organizations incurring the costs. These forecasts are summarized on a divisional basis and forwarded to the Comptroller's Organization which compiles forecasted results by product lines. This data is then furnished to the Pricing Organization for the development of price factors for each product line which are designed to recover these costs. Attachment "E" shows the basic standard cost-price relationship. Price

factors are applied to the standard cost of individual products comprising each class and, therefore, provide for the recovery of all costs associated with the products and for a reasonable—and reasonably uniform—return on investment.

Prices for services such as systems equipment engineering and installation are established on the same basis as manufactured items, using a price factor applied to a standard cost. In the case of Supplies, i.e., products purchased from others for resale as such to the Telephone Companies, the price factor is applied to purchase cost.

XIV. NEW PRODUCTS

It is Western Electric's aim to continue to meet the needs of the Bell Telephone Companies and thereby benefit the ultimate telephone subscriber with low cost, quality products incorporating the latest innovations.

In the case of most new products, the price is developed using a standard cost. For many years, however, on major new products involving significant new technology or new manufacturing facilities or processes, where the normal manufacturing condition will not be attained until after the first two years of production, a price will be developed using what we call a normalized cost. Normalized cost is calculated on the basis of what the current standard cost would be if the product was being produced under its normal manufacturing conditions. Prices are intended to recover the excess of standard cost over normalized cost within a reasonable period. In no event will the price factor be applied to less than the normalized cost.

The reason for establishing prices of new technology products using a normalized cost instead of temporary high initial costs is to avoid unreasonably burdening the early purchasers of these products with their relatively high initial production costs, to foster the introduction and use of new innovations for the benefit of the general public, and to facilitate attaining an efficient manufacturing level. Since manufacturing management is evaluated on its ability to achieve these normalized costs, they are vitally interested that these targets will be reasonable and attainable by efficient management.

This accepted method of pricing is required to introduce new technology since prices based on the unit cost of production when volume is low and per item costs are temporarily high would prevent the realization of the very demand and unit cost which warranted development of the product in the first place. Such pricing would impede the introduction of products incorporating new innovations. It is common industry practice to initially set prices which facilitate realization of expected product demand. Thus, Western is in no sense unique in establishing prices for new technology products below the initial temporary high cost levels.

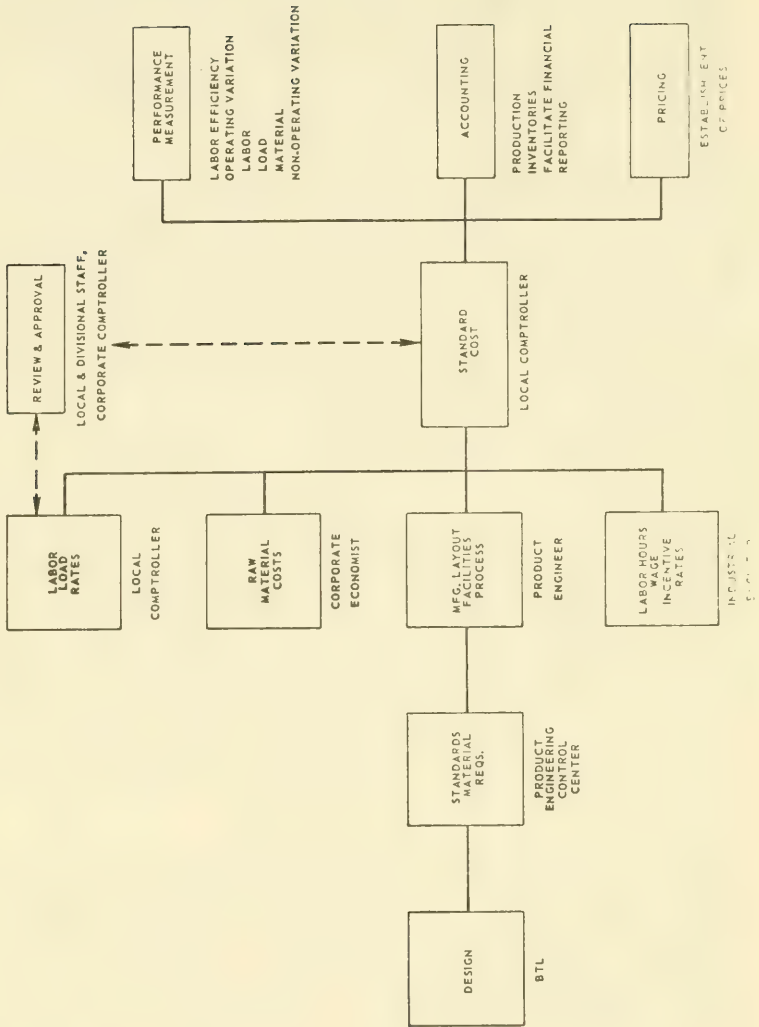
XV. SUMMARY

Western Electric has developed through many years of careful study and planning an accounting system that is in accordance with modern concepts of sound accounting practices. It conforms to the practices followed by other manufacturers and covered in the accounting manual for the electrical manufacturing industry as recommended by the National Electrical Manufacturers Association. Western's corporate instructions prescribe the procedures for the development and allocation of costs. The accuracy of these costs and their association with Western's products to which they are charged are reviewed both by Western's internal auditors as well as by the independent public accounting firm, Arthur Young and Company. Western's prices are cost based and are designed to provide products and services to the Bell Telephone Companies at the lowest price which will recover its anticipated costs and provide a reasonable return on the investment involved.

Internal and external audits; separation of the costing and pricing function; the commonality of components and cost centers among products; the consistent application of costing and pricing policies to all products; the use of standard cost for managerial control; each assure that all products are priced on a consistent, cost related basis.

Western's financial results, its accounting system and any changes in its accounting procedures are reported regularly to The National Association of Regulatory Utility Commissioners—Federal Communications Commission, Staff Subcommittee on Manufacturing and Service Affiliates. Its prices and profits are also subject to continuous regulatory scrutiny by federal and state regulatory agencies. All of these controls, checks and reviews combine to insure the integrity of Western's costing and pricing.

STANDARD COSTS DEVELOPMENT AND USE



Attachment B

ARTHUR YOUNG & Co.,
New York, N.Y., March 6, 1974.

WESTERN ELECTRIC COMPANY, INC.,
New York, N.Y.

DEAR SIR: We have examined the financial statements of Western Electric Company, Incorporated for the year ended December 31, 1973 and have reported thereon under date of February 12, 1974. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

We have also examined the accompanying report of Profit by Lines of Business—Bell Telephone Companies for the year 1973 together with the accounting procedures of the Company used in determining the profit, before interest, from sales and the related net investment (total assets less accounts payable and other accruals, accrued current and deferred taxes, unamortized investment credit and accumulated provisions) applicable to classes of product and services sold to Bell Telephone Companies, and the allocation of other income and related net investment to these companies. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying report for the year 1973 presents fairly the operating results of Western Electric Company, Incorporated by lines of business with Bell Telephone Companies, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Further, in our opinion, the accounting procedures of Western Electric Company, Incorporated comply with the requirements stated in the Final Judgment of the United States District Court in Civil Action No. 17-49 ordering Western Electric Company, Incorporated "to maintain cost accounting methods that conform with such accounting principles as may be generally accepted and that afford a valid basis, taking into account the magnitude and complexity of the manufacturing operations involved, for determining the cost to Western of equipment sold to AT&T and Bell operating companies for use by them in furnishing common carrier communications services".

Yours very truly,

ARTHUR YOUNG & Co.

Attachment C

[From the Wall Street Journal, June 10, 1974]

ACCOUNTING BODY PROPOSES FIRMS CHARGE RESEARCH-DEVELOPMENT COSTS AS INCURRED

STAMFORD, CONN.—In its first major pronouncement, the Financial Accounting Standards Board proposed that companies be required to charge off research and development expenses as incurred, rather than write them off gradually against future sales revenues.

The proposal would take effect next Jan. 1. The only exception would be for research and development outlays directly reimbursable by another party. A company could continue to defer such costs.

The proposal was published for public comment, due by Aug. 5. After that, the standards board may adopt the final standard, and it's expected to do so with little change. The board's seven members voted unanimously to publish the "exposure draft," following a public hearing and written comments on the issue. The board's rules require five votes to adopt a binding accounting standard.

Most companies already expense R-and-D outlays, but there are conspicuous exceptions, particularly in the aerospace industry and computer manufacturing. McDonnell Douglas Corp., an airframe maker, carried nearly half a billion dollars in deferred development costs as an asset on its balance sheet last Dec. 31. It faces a huge writedown, though the exact amount depends on the fine points of the standards board's proposal.

If the proposals are adopted as expected, McDonnell and other companies with deferred R-and-D costs would be required to restate past years' financial results as though those costs had been expensed when incurred.

This means the change-over won't be charged off against 1975 profits, which in some cases would have exceeded the expected 1975 net. Instead, the accounting change will show up as a charge against retained earnings. Taking into account tax benefits, the charge will be roughly one-half the accumulated

R-and-D outlays being written off. (In McDonnell Douglas's case, deferred development costs were \$476.8 million at year-end 1973, with \$612.8 million retained earnings.)

Proponents of deferring research costs have argued that because research activities lead to later product sales, the costs should properly be charged against those sales, just as a piece of machinery is gradually written off over its productive life.

The standards board, however, found "a high degree of uncertainty as to the amount and timing of future benefits (from research), if any." It said a casual link between research and particular product sales later can seldom be shown, and the failure rate for research projects is high.

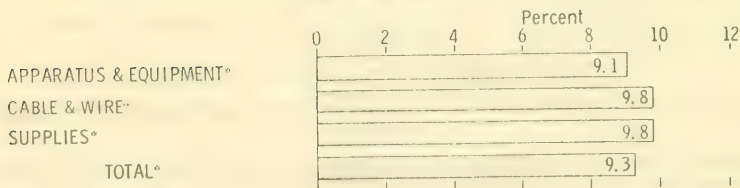
In practice, deferring research outlays has on occasion shocked stockholders with huge, unexpected writeoffs when a company finally decides to "bite the bullet" and charge off the accumulated costs of a project that didn't pan out.

The precise impact on companies depends on what the standards board defines as research and development. The 23-page exposure draft includes a detailed enumeration. In one important exclusion, the board said that design or construction work on production facilities (except for pilot plants) aren't research and development. The exposure draft is silent, however, on what accounting treatment to apply to those expenditures.

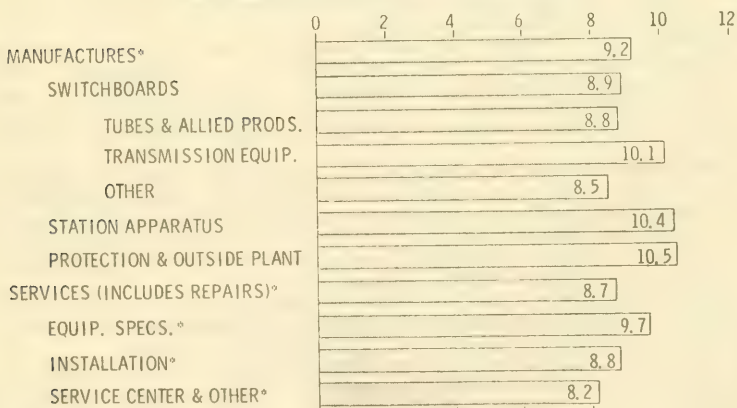
The standards board also said it is still deliberating how to account for a group of other costs that originally had lumped in with research and development. These include market research, promotion and relocation costs. Similarly, the board is still debating what accounting to apply to new companies in the stage before their production and sales get into full swing.

Attachment D

WESTERN ELECTRIC RETURN ON INVESTMENT BY BROAD PRODUCT LINES BELL BUSINESS 1968-1973



APPARATUS AND EQUIPMENT ANALYZED



*Includes effect of reallocation of surplus and other adjustments

BASIC STANDARD COST-PRICE RELATIONSHIP

STANDARD COST	OTHER COSTS
LABOR	VARIATION
OVERHEAD	DEVELOPMENT EXPENSE
MATERIAL	MERCHANDISE EXPENSE
	GENERAL EXPENSE
	INCOME TAX
	RETURN ON INVESTMENT

$$\frac{\text{OTHER COSTS}}{\text{STANDARD COST}} + 100\% = \text{PRICE FACTOR}$$

$$\text{STANDARD COST} \times \text{PRICE FACTOR} = \text{PRICE}$$

EXHIBIT 3a.—*Bell System Response to Statement of Computer Industry Association*

RESPONSE ON BEHALF OF THE BELL SYSTEM TO STATEMENT OF THE COMPUTER INDUSTRY ASSOCIATION

In its statement filed July 2, 1974, the Computer Industry Association claims that IBM and AT&T by various anticompetitive means are making it very difficult, if not impossible, for its members to compete against them and are threatening the business viability of its members.

Insofar as the Bell System is concerned, it is attacked for its interconnection policies and its alleged bias in favor of using the products and services of its own manufacturing subsidiaries to the exclusion of the offerings of others. It is alleged to have been a laggard in innovativeness prior to the advent of competition from others. It is said that "*the sleeping giant awoke*" (p. 12)¹ when others developed terminals allegedly better able to serve the growing need for communications with and between computers. Only then, according to the Association's statement, did AT&T's indirectly owned subsidiary, Teletype Corporation, come up with Dataspeed 40.

Moreover, the tariffed offerings of that terminal equipment by the Bell telephone companies are claimed to be subsidized and underpriced. Further, Teletype is attacked for its "recent decision to market the Dataspeed 40, in whole or in part, to entities outside of the Bell System threaten[ing] the existence

¹ (p. 12) and similar references are to pages in the statement of the Computer Industry Association.

of the established manufacturers of terminals, low and medium speed printers and information display devices" (p. 15). Here again, subsidization is alleged to give it an unfair price advantage.

There are many general charges leveled against the Bell System. These, however, are adequately refuted by other Bell System filings and testimony before this Subcommittee; and we shall not burden the record with redundant material. We address ourselves herein primarily to the Association's allegations regarding Teletype's business activities and its offering of its Dataspeed 40 terminal. Where appropriate, we shall touch briefly on some other charges of the Association.

Contrary to the Association's assertion, Teletype has always been *the* leader—and never a follower—in its segment of the telecommunications terminal equipment industry. It offers reliable products of high quality, embodying the latest developments in the technology, at reasonable prices. Because its performance is generally not matched by others, it is not unusual for its competitors to resort to unwarranted charges of unfair advantages or business tactics.

Teletype's predecessor corporations' involvement with terminal equipment goes back to 1906. Teletype's place in the vertically integrated Bell System dates from 1930. It was acquired preparatory to the Bell offering of TW-service pursuant to tariffs the following year.² Prior thereto Teletype was the sole source of supply of teleprinters to its few customers, of which Western Union and Postal Telegraph were the most significant.

The Association says that "[f]rom 1931 until 1965 the Teletype machine remained basically the same, with minor innovations in transmission speed and cosmetic improvements" (p. 11). This is like saying that today's computers embody only slight improvements in speed and cosmetics over the IBM punch card machines of the 1930's. In fact, substantial changes in the versatility and usability of Teletype machines occurred during Teletype's first three decades as a part of the Bell System. For example, the achievement of speeds of 100 w.p.m. occurred, *not in 1965*, as the Association would like the Subcommittee to believe (p. 11), *but in 1943*, when Teletype redesigned its Model 15 to meet the needs of the military. Examples of Teletype's major advances from 1930 through the middle 1960's are catalogued in Attachment "A" hereto.

The statement that Teletype had "no meaningful competition" (p. 11) during the period 1930–1960 may be reasonably accurate. The claim that it had "a captive market" (p. 11) certainly is not. The number of purchasers of Teletype machines proliferated during those 30 years. To suggest that customers such as the United States Government, Western Union, the press services, and foreign common carriers constituted a captive market is plainly ridiculous. Teletype's market leadership stemmed from the superiority of its products and the reasonableness of its prices.

Regarding the change to the ASCII code to which the Association alludes, this occurred in 1961 (*not* 1965 as the Association states, P. 11). It came about when the need for a broader, more extensive and uniform code with capabilities for international adoption was recognized. The need for a new code and higher speed coincided with the emerging requirements of rapid communication with computers and the need to communicate computer generated information. Teletype reacted to that need and *not* to a mirage of competitive products which the Association—by a convenient four-year error of dates—would like the Subcommittee to believe existed. This occurred several years prior to the *Carterphone* decision, which the Association characterizes as the catalyst to modernization (p. 7). As early as 1963, Teletype's Model 30 became widely used in shared time computer systems.

As shown in Attachment A—well in advance of the later proliferation of other manufacturers—Teletype introduced many new lines of equipment ranging in transmission and printing speeds from 100 w.p.m. to 1200 w.p.m. These

² The Association's statement that Teletype's immediate parent, Western Electric, joined the Bell System in 1930 (p. 11) misses the mark by almost half a century. The correct date is 1881.

included the Models 28, 32, 33, 35, and 37; Inktronic®, Dataspeed Types I, II, IV and V; 4210 Magnetic Tape Terminal; and Controlmatic.

Dataspeed 40 is the latest evolutionary development in Teletype's product line. It has a cathode ray tube display monitor (in addition) to the ability to print received or transmitted copy), whereas earlier machines could only print or punch paper tape. The Model 40 has an electronic memory which greatly simplifies editing prior to transmission. This is a significant advance over the punched tape, which provided storage (memory) for subsequent transmission.

The Association asks "how . . . could AT&T [presumably Teletype] offer the device at less than one-half the price of even the largest producer in our industry—IBM?" (p. 13). Teletype does not currently make a unit equivalent to the IBM offering to which it is compared. Some other manufacturers which do, however, apparently have lower prices than IBM. Incoterm, for example, advertises the price of its equipment as half the IBM price. (See Attachment "B", *Computerworld*, May 15, 1974, p. 17.)

Teletype's Dataspeed 40 is evidently a very good buy. Its low price has been made possible not by the reasons advanced by the Association,³ but because Teletype is a highly efficient company and has the expertise—obtained from decades of experience—which enables it to design and manufacture high-quality products at low costs—in most cases, the best and least expensive products in the business. For Model 40, Teletype developed a new printer and also a magnetic oxide semi-conductor peculiarly appropriate to this application.

The Association, however, "can see answers in the ties and opportunities for cross-subsidization that exist between the utility [AT&T] and its supplier [Teletype]" (p. 13). Four examples are given. All are lacking in substance.

The Association says: "Teletype, with a massive captive market within the Bell System companies, can commit to production quantities and invest in tooling with full knowledge that its huge customer base is insulated from effective competition" (p. 13). Teletype's "massive" Bell market constituted only one-third of Teletype's sales in 1973. Its Bell sales amounted to \$52.5 million—far less than the annual sales of some Association members which are said to be "in excess of \$200 million" (p. 1). Indeed, the latter exceed Teletype's total sales, which are highly volatile.

Moreover, contrary to the Association's assertion, Teletype's Bell market is not a "captive" one. Western Electric does *not*, as charged (pp. 10, 13), make the purchasing decisions of the Bell Telephone Companies. The telephone companies are entirely free to purchase their terminals from whomever they please. We shall not elaborate here because this matter was fully covered in Bell System testimony and submissions to the Subcommittee last year. (Tr.⁴ 1281-2, 1297-8, 1300, 1331-2, 1356-7, 1413, 1418, 1440, 1731-2).

Out of a total of roughly 35,000 computer-oriented terminals in use in the Bell System, approximately 10,000—over one-quarter—were produced by manufacturers other than Teletype. Each Bell Telephone Company makes its own selection of terminal devices for specific applications. For example, the service order activity in most companies has been mechanized; and seven companies have to use non-Teletype equipment of three vendors to process their orders.

The Association asserts further: "AT&T may not yet be capable of admitting it, but there are companies capable of offering superior products . . ." (p. 17). The Bell System does not deny that this may be so in some areas. On the contrary, AT&T Chairman John D. deButts said in a speech on September 20, 1973 at the annual convention of the National Association of Regulatory Utility Commissioners:

³ For example, the Association points to the Bell System's "developing and . . . using their own ["glass envelopes for their CRT displays"] in limited quantities" (p. 13). The fact is that Teletype buys them from outside suppliers.

⁴ The "Tr." references are to the printed record of the Hearings on the Industrial Reorganization Act, Part 2, July 30 and 31, August 1 and 2, 1973.

"We recognize, of course, that the world of telecommunications is not 'ours' and that there are a great many organizations beside our own whose talents could effectively be brought to bear on the growth and improvement of the nationwide telephone network. Our aim is to expand and not restrict their opportunities to do so. To that end we are looking for ways by which we in the Bell System might broaden the base of participation in the task of supplying the facilities for a constantly growing, constantly changing network. The Western Electric Company is a great outfit and I am sure, determined to retain its leadership in the product of communications facilities of advanced design. But to be best where it counts most Western Electric can't be best in everything. Nor does it seek to be. In 1972, for example, Western Electric provided about \$500 million of telecommunications products—switching equipment, wire and cable, carrier and microwave equipment—which it had purchased from others on behalf of the Bell telephone companies—and the telephone companies themselves bought some \$200 million to \$300 million more directly from outside suppliers.⁵ I anticipate that in the years ahead the job of supplying the network will be even more broadly shared and that increasingly suppliers outside our business who are ready, willing and able to fulfill the rigorous standards of performance that quality service demands will be helping to build the telecommunications network of tomorrow."

The Association's second charge of subsidization relates to "the recruiting, training and support of an effective field service organization." "Teletype", it says, "has no comparable expense since its products are maintained by telephone operating company employees" (p. 14).

The Association's statement would come as a shock to the Teletype employees operating out of 28 service centers around the country who are totally dedicated to providing repair and maintenance service to Teletype's non-Bell customers. A similar reaction would come from Western's service center employees who repair and refurbish Teletype equipment for the Bell telephone companies. In either case, the customer pays for such services—either directly or in the price of the product (warranty expense is a part of overhead). Where such services are performed by telephone company personnel, the subscriber pays for them in his monthly charge.

The Association's third charge of subsidization relates to marketing expense. Allegedly, Teletype "can sell literally thousands of terminals to the Bell operating companies with little or no sales effort or expense" (p. 14). To the extent that this allegation is based on the assumption that the Bell telephone companies automatically buy whatever Teletype equipment AT&T or Western wants them to buy, it is patently erroneous for reasons previously stated. Indeed, like any other developer and manufacturer, Teletype has occasionally offered new models which did not find favor with its customers—both Bell and non-Bell.

During 1974, Teletype expects to spend in excess of \$4 million in marketing and related efforts. Certainly, that sum is not inconsequential. At the same time, it may well be true that Teletype does not expend proportionately as much money in "hard sell" and "recognition marketing" as its competitors apparently do. However, this does not result from Teletype's affiliation with the Bell System. On the contrary, it flows directly from the fact that due to over half a century of market leadership, Teletype's name does not require additional market recognition for its products or any "hard sell". Indeed, just as "Campbell's" has come to represent wholesome soup to many housewives, "Teletype" has come to mean high-quality, low cost teleprinter equipment to consumers in the terminal market. A substantial portion of Teletype's non-Bell sales are repeat sales to large volume purchasers which have been Teletype's customers for many years, and which know and respect the Teletype

⁵ As Mr. Fletcher pointed out (Tr. 1300), purchases from Western constitute approximately 80% of the Bell market for telecommunications equipment. The Bell market in turn constitutes approximately 80% of the total United States market. Western's non-Bell sales are negligible. Simple multiplication indicates therefore that Western's sales represent less than two-thirds of the domestic telecommunications market, not the 80% asserted by the Association (p. 9).

Corporation and its products. It is therefore understandable that competitors which do not enjoy Teletype's reputation may find it necessary to spend proportionately more in their marketing efforts.

Under the heading "AT&T As An OEM Competitor," the Association lists six advantages it says Teletype would lose were it a separate (Unaffiliated) company (p. 16). We have already commented upon two—alleged "captive market," and the alleged lack of any need of "a field service organization and marketing organization".

A third—a variation of an earlier assertion—is that Teletype "would have to make business decisions and to write off its investments in the light of a truly competitive marketplace." (p. 16). Teletype's marketplace, however, is a competitive one—indeed, a highly competitive one. Moreover, two-thirds of Teletype's sales are to non-Bell customers who even the Association cannot claim to be captive customers. The fact is that Teletype's investments are segregated from those of other Bell System companies and are depreciated in accordance with generally accepted accounting principles.

Equally unfounded are the remaining three allegations of advantages which Teletype would lose its Bell System affiliation.

The first is that "Teletype, as a separate corporation, would have access to capital at interest rates commensurate with its own business prospects" (p. 16). This assumes, improperly, that Teletype has been the beneficiary of lower interest rates than it would have to pay as an unaffiliated company. The fact is that Teletype has no long-term debt. Its short-term borrowings have been from Western at the prime rate.

A second allegation is that Teletype "would be able to draw on the technical resources of Bell Labs only on the same terms and conditions as other suppliers to the nation's telephone systems" (p. 16). This erroneously assumes that the Bell Labs provide the research capability of Teletype; whereas the fact is that Teletype has its own research and development organization consisting of approximately 450 people and costing roughly seven percent of its gross sales.

The third of the Association's remaining allegations is that Teletype, if spun off, "would have to price its product to recover a fair return" (p. 16). This implies that this is not presently the case when, in fact, it is. While it does not always meet its objective, Teletype prices its products at levels designed to achieve a reasonable rate of return on its net investment. Over the past eleven years, its rate of return has ranged from a low of 2.9 percent to a high of 15.2 percent, and averaged 9.5 percent. Contrary to what the Association might wish to imply, no part of Teletype's investment is buried in the accounts of other Bell System companies.

What the Association and its members are really complaining about is that Teletype's superior performance, in usually providing a better product at lower cost, makes it a very strong competitor—indeed, a stronger competitor than they can or wish to cope with.

Apparently unable to match Teletype's performance, they now seek to denigrate its achievements by charging Teletype with unfair advantages and nefarious practices. We believe that, in this response, we have adequately dealt with all of their charges and have satisfactorily demonstrated that each and every one of them is utterly lacking in merit.

Attachment A

EXAMPLES OF TELETYPES MAJOR ADVANCES FROM 1930 THROUGH THE MIDDLE 1960's

1930—Model 15 introduced, using type bars and a stationary platen.

1931—The first Selective Calling Private Line System developed (64A and B).

1931—Manual TWX introduced, using Model 15 equipment.

1935—Model 19 Automatic Send and Receive machine introduced enabling preparation of punched tape prior to transmission.

1938—Model 26 introduced, new low cost page printer.

1940—A major improvement in Selective Calling introduced, known as 81 type.

1941—The ability to receive punched paper tape (with or without simultaneous printing on the tape) was introduced to enable a more automated transmission capability. (Model 14 Typing Reperforator).

1943—Model 15 redesigned for U.S. government to operate at 100 w.p.m.—first successful page printer at this speed.

1948—First electronic multiplex four-channel system for U.S. government.

1950—A totally redesigned machine was developed known as the Model 28. This equipment operated at 100 w.p.m. and also enabled functions to be performed (e.g., turning components on/off) under the control of a wired logic "stunt box", which contained up to 42 separate actions. In addition, the printing mechanism was drastically new, using a "type box", itself interchangeable and with interchangeable pallets, rather than the traditional type bars found in the Model 15 and standard office typewriters. Quieter operation was another innovation achieved through the use of sound deadening insulation.

1951—First torn tape switching systems.

1951—81D Selective Calling introduced, incorporated many automatic features such as automatic message pick-up.

1952—First electronic Monoplex, especially designed for the DEW line to meet special transmission difficulties created by atmospheric conditions.

1953—First of high-speed paper tape systems printing at 600 w.p.m. for news services.

1955—First transistorized electronic multiplex developed for U.S. government.

1956—Speed of paper tape systems increased to 1000 w.p.m.

1957—82 type Automatic Switching System developed for Bell System.

1958—Delivery begun on the new 83A/B Selective Calling Systems for medium volume customer requirements, providing positive answerback and unattended operation.

1959-64—Several refinements to the 83B series were effected. By 1964 there were over 1,000 83B Systems in existence.

1961—Datspeed I introduced, providing for high speed (1050 w.p.m.) papertape transmission in standalone terminals.

1961—83B Systems interface available for computer use.

1962—Dial TWX introduced in Model 33 enabling connection without operator intervention.

1962—Eight-level ASCII coded equipment introduced as Models 33/35. Greater accuracy through the use of parity and additional codes required for computer operations, were the significant innovations. The older Baudot code equipment only offered 32 (2^5) distinct codes, while the ASCII structure enabled 128 (2^7). This equipment was offered on TWX, and Dataphone.

1964—Datspeed V introduced, using parallel transmission, enabled many low cost transmitters to connect to central location receiver for data collection. (Like the Datspeed I, this was a standalone unit.)

1965—ASCII coded equipment available for Private Line Selective Calling Systems, specifically offered at this time with the line discipline known as 8A1/8B1.

1966—Full computer interface available with the above systems.

1966—A new data entry device was developed and introduced, known as the "Controlmatic", using the new Model 35 teletypewriters as the basic equipment for forms entry and paper tape storage.

1967—Technological improvement enabled the development of a paper tape storage replacement introduced as the "4210 Magnetic Tape Terminal". It provided storage for subsequent transmission of up to 150,000 characters of data, input from either a Model 33 or 35 teletypewriter. (Subsequent development permitted interconnection of this equipment with the Model 37 and 38 units as well.)

May 15, 1974



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EXHIBIT 4.—*Prepared Statement of Mr. Crosland*

PREPARED STATEMENT OF EDWARD B. CROSLAND OF BEHALF OF AMERICAN TELEPHONE & TELEGRAPH CO.

My name is Edward B. Crosland. I am Senior Vice President of American Telephone and Telegraph Company and a director of the Chesapeake and Potomac Telephone Company of Virginia and the South Central Bell Telephone Company. I have been employed by the Bell System for 27 years with responsibilities primarily for legal and regulatory matters and communications service to the government.

My associates at the table are Richard R. Hough, Vice President of AT&T and President of the Long Lines Department of AT&T; Howard J. Trienens of Chicago, an attorney with broad experience in telephone and railroad regulations; and Dr. William O. Baker, a noted scientist and President of Bell Telephone Laboratories. The four of us, thanks to your courtesy, will speak as a panel.

Our combined testimony, Mr. Chairman, will respond to the pervasive and far-reaching question which you posed last year in opening the subcommittee's hearings on telecommunications—namely, whether competition in certain segments of the industry would benefit the public.

We assure you, Mr. Chairman, that the Bell System fully recognizes it is not within our province, or that of any other segment of industry, to make the ultimate decisions as to what constitutes the public interest in these matters. These questions address themselves solely to the wisdom of governmental authorities—regulatory, judicial and legislative, both State and Federal. Nonetheless, we would be remiss in our obligation to the consumers we serve if we failed to express to the public and to government our deep concern over the deleterious results we are convinced will follow from present and proposed policies regarding competition. And, accordingly, we are respectfully urging regulators and legislators to study the facts in depth and to weigh carefully the consequences of their actions before passing judgment on these exceedingly complex issues which affect importantly every telecommunications user in the nation.

Manifestly, should appropriate governmental authorities determine that genuine competition in the furnishing of telecommunications is in the public interest, the Bell System stands ready to operate in a competitive environment.

Should competition be decreed to be the way of life in the future of communications, we strongly insist, however, that it be *real* competition in the economic sense and not selective, contrived or "pick and choose" competition. Otherwise it would not allow for price flexibility, would not weed out the inefficient firms, would not achieve the most economic utilization of resources, and would not benefit consumers generally in terms of lower prices and better services which genuine competition is supposed to accomplish.

The final decisions, we believe you will agree, should not depend upon abstract maxims or automatic assumptions but upon practical results. Competition is not the end in itself. The basic objective is a telecommunications system that will bring the best service at the lowest cost to the largest number of consumers. While competition serves most American business well—economists, lawmakers, courts and regulators have long recognized there are exceptions—special cases—where competition hurts rather than helps the average consumer. Our testimony will show how and why telecommunications is one of these exceptions.

We submit that a policy of injecting competition into telecommunications would reserve the judgment reached by Federal and State authorities many decades ago. After very unhappy experiences with competition in the early days of this business, government authorities concluded that the public interest is best served when a single telephone company is held responsible for all aspects of service to all customers within an exclusively franchised territory, under close government regulation. This concept, known as the common carrier principle, has provided this country over many years with the finest communications system in the world, and has remained essentially inviolate until recent years.

What would be the consequences of abandoning this principle and fragmenting the communications system through policies that encourage selective competition? New studies we have made, and our recent experience, lead us to suggest four results:

First, the most important consequence to the average consumer—and one perhaps least understood by many—is that competition will force a profound and revolutionary change in traditional pricing patterns for telecommunications in this country. As we will show in considerable detail, the net effect of this change will be to lower rates primarily for some business firms but increase rates for the nation's 65 million households with telephone service, with particular impact on low-income families and those living on fixed incomes.

Second, beyond shifting the burden from one class of customers to another, basically large business users to residence users, the expansion of competition

as contemplated by present policies and pending proposals would increase the total cost of the nation's telecommunications—because of wasteful duplication of facilities and other inefficiencies.

Third, the national telecommunications network is composed of literally trillions of parts, all of which must work at any moment with great precision in complete harmony with all the others. The introduction of facilities and services provided by competing companies, with different standards of quality control and different arrangements of installation, maintenance and repair, would undermine the coordination in planning and in operating the network that has been vital to high quality service.

And fourth, this loss of unity and cohesion could retard the introduction of new technology into the telecommunications system, and thus reduce the renowned research and development contributions of the Bell Laboratories.

Before expanding on these points, I would like to comment briefly on several other matters.

Regrettably, considerable confusion has developed with regard to our position on interconnection with the Bell System network of equipment manufactured by other companies. We are not opposed to *all* interconnection. The independent telephone companies and the Bell System have long cooperated in providing joint through service and we interconnect with government-owned facilities, broadcast, data and computer equipment. In short, we are opposed to interconnection where it would result in degradation of service or in economic penalty to consumers.

Telephone equipment is being purchased in increasing amounts from other manufacturers by Western Electric, or by the operating telephone companies. In fact, the Bell System has recently announced an organizational change, creating a new division at AT&T to make more efficient the process by which equipment from outside suppliers is evaluated and purchased. The crucial point is that if the telephone companies are to be responsible for good quality telecommunications, they must retain responsibility for the quality of manufacture, installation, operation and maintenance or the method of interconnection to the network.

We wholeheartedly agree with the concern expressed by Dr. Clay T. Whitehead in his testimony before you earlier this month that the recent trend of government policy regarding competition has been "turning the government into a cartel manager, apportioning markets among the 'competitors'" (Tr. 1609). As Dr. Whitehead said, this is "very bad" (Tr. 1648). The danger is that the Federal Government is in the process of creating and protecting a place in the market for new entrants while preventing fair competition by existing common carriers. Under the guise of advancing competition, the government is placing the consumer in the worst of both worlds—he benefits neither from a regulated natural monopoly nor from true competition.

Some of Dr. Whitehead's other observations appear to be contradictory. On the one hand he praised the Bell System's "unparalleled accomplishments" under the traditional concept of natural monopoly (Tr. 1610). Yet he proposes a drastic dismantling of the very structure that has been so successful, without indicating how the new structure would be improved (Tr. 1611).

He favors continued monopoly in some segments of the telephone business, but not in others. This approach fails to recognize the integrated nature of the telecommunications system—the same facilities that provide switched telephone service are used in providing the other services. Telephone conversations and data transmissions and facsimile and other messages, whether they originate from a home phone or business PBX, flow simultaneously through the same switching centers, cables, microwave towers, repeaters, amplifiers, etc. Thus, a change in any one part of the system can have a major impact upon other parts of the system. You simply cannot isolate segments of the system or market segments in the way Dr. Whitehead seems to envision.

The problem we have with certain of Dr. Whitehead's unsupported statements is even more vividly demonstrated by his comment that "what he (the consumer) does with the communications capability he pays for is his business—just as what he does with his water, his electricity, and his gas is his business" (Tr. 1612). Dr. Whitehead ignores a vital distinction between these utility services. The consumer of water, electricity or gas is on the receiving end only of what the utility transmits. If his connecting appliances are inappropriate or do not work well, only he suffers. But the telecommunications

customer is in an entirely different situation. He not only receives through the utility system, but he also transmits through it. And if his equipment transmits an improper signal or it blocks the network on incoming calls, customers besides himself may suffer, and whole segments of the intricate national communications network can be harmed or disrupted.

Dr. Whitehead seemingly acknowledges that the introduction of selective competition will eliminate the contribution made by revenues from other services to keep rates low for residential customers, but he tries to minimize the effect. The percentage of Bell System revenues directly subject to competitive markets is considerably more than the 5 percent figure cited by Dr. Whitehead (Tr. 1615). But the more important point is that changes in competitive markets will also produce changes in non-competitive markets, so that the total effect is much greater than he recognizes.

Similarly, the Federal Communications Commission has ruled in favor of so-called competition without any hearings or studies of the consequences of its actions on the average telephone customer. Not until last April, long after the landmark decisions on competition, and following some urging by members of Congress, did the FCC initiate a factual inquiry into the vital question of the economic impact of competition on consumers (FCC Docket No. 20003). We hope the Commission will move forward with this Docket with great dispatch.

The only inquiry by government officials which addressed the economic consequences on users completed to date was recently conducted by a Committee of the National Association of Regulatory and Utility Commissioners. That committee found and condemned the fact that readjustments of prices would result from the introduction of competition in telecommunications and would substantially increase rates for residential telephone users.

We recognize that Congress is ultimately responsible for the laws governing the regulation of telecommunications, and we believe that Congress will want to weigh the economic consequences that a change in the law or its administration will have on the public generally. It is in this spirit of providing factual information needed to make a responsible decision in the public interest that the Bell System has spoken out on this subject and is testifying today.

If competition in telecommunications is found to be in the public interest and the laws are to be changed to encourage competition, Bell would compete fully and fairly, making price adjustments to a more cost-oriented basis which competition would require. With its record of efficiency and innovation, we have every confidence that the Bell System can perform successfully in a truly competitive situation.

With this brief review of our position, Mr. Chairman, I would like now to develop more fully the primary principles.

I. THE COMMON CARRIER PRINCIPLE

At the turn of the century the telephone business was developing under of unbridled competition. Several companies were scrapping among themselves to establish service in the same area—one company in one part of town, another company in another part; one company on one side of the street, another company on the other; and occasionally, two rivals would be putting up poles and stringing wires side by side. One company's facilities often could not be connected with another's.

Consumers often found it was impossible to telephone a neighbor across the street or a relative across town; or to do so, they had to buy service and have telephone installed from two or three different companies. In short, experience at the local level soon made clear that competition in the telephone business brought wasteful duplication, high costs, poor service, and great confusion.

State and local governments then moved to create a more orderly arrangement. They came to understand that in order to obtain the best service for the public at the lowest cost, responsibility for service to all customers in a designated area must be assigned to an individual franchised carrier. At the same time, government regulation of price, profits and service was initiated to substitute for competition as the protector of consumer interests. This basic concept, the common carrier principle, has guided the development of telecommunications in this country ever since. It spawned the goal of universal service: a pricing pattern based primarily on the value of service to users:

the concept that consumers could hold a single entity responsible for every aspect of service, end-to-end; and nationwide and statewide averaging of rates, so that telecommunications is made available to consumers to the greatest possible extent on an equitable basis.

It became widely accepted that the early disasters at the local level should not be repeated on the national level. So the common carrier principle was extended nationally as the Bell System developed the long distance transmission facilities needed to connect its own local operating companies and the independent telephone companies. Thus there emerged a closely integrated national network, in effect a single system linking all the telephones in the country.

Recognizing the advantages of a regulated common carrier over a splintered competitive system, Congress as early as 1911 provided for Federal regulation of interstate telephone service, by the Interstate Commerce Commission.

The unity and cohesion achieved under the common carrier concept made possible, as no other structure could, the achievement of broad *social* goals—goals that would be impossible to reach under the economic imperatives of a fragmented, competitive system. And so, the primary thrust of government policy became the attainment of universal service. The objective obviously has great social and economic value for all individuals, both business and residence users; as more people became connected to the network, its use has become more valuable to all. The telephone is widely available to summon help in emergencies, to knit families and friends together, to transact business quickly and conveniently.

But a universal service could be achieved only through rates that most residence subscribers and the small business consumer could afford. Accordingly, with encouragement and, indeed, the insistence of regulatory agencies, rates have been structured to serve this basic objective. Rates for the most basic service—the local use of the residential telephone—are low in relation to costs. Rates for long-distance calls, service to businesses, and more elaborate equipment have been set intentionally to help hold down rates for the local use of the telephone by residential customers.

There are two points I would like to emphasize about the common carrier principle. First, this concept was initiated or strongly supported by government officials—state legislatures, state and Federal regulators, the courts and the Congress—because they recognized the need to serve the broadest public interest.

And second, the acid test for the long-standing common carrier concept must be the outstanding achievements obtained for consumers generally.

GOVERNMENT SUPPORT FOR THESE CONCEPTS

In the early part of this century, numerous state legislatures and courts affirmed that competition in the communications business entailed wasteful duplication, and that regulated common carriers better served the public interest. In 1921 a Congressional committee supported the common carrier concept by stating that duplication of telephone facilities "greatly increases the burdens which must be borne by the telephone users," and affirming the principle that "the best telephone service can be rendered by one company, under proper regulation as to rates and service."¹

The objective of universal service was reinforced by the Congress in the Communications Act of 1934. The first sentence of the Act states that the purpose is "... to make available, so far as possible, to all people of the United States a rapid, efficient, nationwide and worldwide wire and radio communication service with adequate facilities at reasonable charges..." (Emphasis supplied).

The Communications Act precludes new entry absent a finding of public interest, and encourages mergers and acquisitions by exempting them from the antitrust laws when approved by the FCC.

In 1953 the Supreme Court held:

"The very fact that Congress has seen fit to enter into the comprehensive regulation of communications embodied in the Federal Communications Act of 1934 contradicts the notion that national policy unqualifiedly favors competi-

¹ H.R. Rep. No. 109, 67th Cong., 1st Sess. 1 (1921).

tion in communications. The Act by its terms prohibits competition by those whose entry does not satisfy the public interest's standard."²

And in May of this year, the Court of Appeals for the District of Columbia, considering a case involving the entry of a new carrier to compete with an established carrier along the same route, affirmed the key point that competition "must be shown to be of benefit to the public."³ The court continued: "Yet it is all too embarrassingly apparent that the Commission has been thinking about competition, not in terms primarily as to its benefits to the public, but specifically with the objective of equalizing competition among competitors. This is *not* the objective or role assigned by law to the Federal Communications Commission. As a result of focusing first on competitors, next on competition, and then on the public interest, the FCC has given scant attention to the question of public convenience and necessity . . ." And then the court concluded, "The whole theory of licensing and regulation by government agencies is based on the belief that competition cannot be trusted to do the job of regulation in that particular industry which competition does in other sectors of the economy."

These well-established principles, recently reaffirmed by the courts, show that Dr. Whitehead, in my judgment, was just plain wrong in stating to this Committee that court decisions establish "competition as the appropriate environment" and in urging that the burden should rest on the regulated entity when a new company seeks to enter a market (Tr. 1613). In reality, our national communications policy established long ago by Congress, and reaffirmed by court decisions, explicitly rejects the notion that competition is to be pursued as the ultimate objective. Congress has established the proposition that a common carrier, operating under government regulation, can provide the best service at the lowest cost to consumers. As I have indicated, an applicant for new entry into the telecommunications business must prove that the proposal serves the public interest, and properly so under the Communications Act.

RESULTS ACHIEVED UNDER THESE CONCEPTS

The ultimate test of the effectiveness of the common carrier principle and the related goal of universal service is the result achieved. By any standard of comparison, these principles have served the public in the United States exceedingly well. I would like to show very quickly three charts which illustrate the point.

This chart (chart 1) shows that since 1960, the average consumer's disposable income has increased 122 percent and the Consumer Price Index has increased 50 percent. Yet costs to the consumer for residential telephone service have increased only 14 percent, or less than one third of price increases generally. Incidentally, despite the heavy burden of inflation and significant interstate revenue support for intrastate local costs, interstate toll rates are now at about the same level as 1960. Thus the regulated common carrier has a pricing stability far better than the competitive sectors of the economy. If telephone rates had climbed as did the cost of living generally, consumers would have paid about \$8.5 billion more in 1973.

This second chart (chart 2) specifically compares the percentage increase in telephone rates with increases in other consumer items. As you can see, telephone rates under the present industry structure have increased less than the major components of the Consumer Price Index, and also less than other regulated utilities.

A recent U.S. Department of Commerce study revealed that the average American industrial or manufacturing worker needed to work less than 26 hours per year to pay for his basic telephone service, the lowest of the 15 industrial nations studied. In other nations included in its study, the worktime required to purchase basic telephone service ranged from a low of 30 hours per year in Canada to 179 hours per year in France.

Another indication of the value of service is the extent of use by consumers. This chart (chart 3) shows that in 1972 the number of telephones per 100 persons averaged 62.8 in the United States, compared with only 31.5 in Japan, 31.4 in United Kingdom, 26.8 in West Germany, 20.8 in Italy, and 19.9 in France.

² FCC v. RCA Communications, Inc., 346 U.S. 86, 93 (1953).

³ Hawaiian Telephone Company v. FCC, — F.2d — (Case No. 73 1018, CA-DC 5-3-74).

As for the goal of universal service, the United States has an unparalleled achievement with telephones in about 84 percent of all households.

I suggest that these data speak eloquently as to the availability, economy, efficiency and convenience of communications service in our nation.

Examining the quality of service, we find the Bell System customers in the United States obtain a dial tone within three seconds of lifting the receiver, more than 99-½ percent of the time. Customers who ask for installation of a new telephone obtain phone service on a prompt schedule more than 95 percent of the time. Yet anyone familiar with telephone service in most countries abroad knows of the long delays in completing calls, the misdirected calls, and the waiting time of many months or even years to obtain new telephone service. And the price for installing a new phone abroad often is astronomical by our standards.

Much of this record, of course, rests upon the performance of Bell Telephone Laboratories and Western Electric in continually creating new technology to expand and improve an incredibly complex communications network. Dr. Baker will discuss the innovations of Bell Labs, which is recognized as one of the world's prominent and most productive aggregation of scientists and engineers.

In short, consumers in the United States pay less for telephone service than consumers elsewhere, yet the service is more available and is superior.

I have reviewed the principles underlying the American telecommunications policy, Mr. Chairman, because I believe these are fundamental to your inquiry. We recognize that the Congress and the regulatory agencies have a continuing responsibility, as do we, to seek better structures. We recognize that no one is proposing the old system of two or three telephone companies in every town. Nevertheless, expansion of competition in terminal equipment and intercity markets inevitably involves some of the same problems—divided responsibility, a loss in coordination and cohesion, wasteful duplication of facilities, a restructuring of rates along more cost related lines and deviation from nationwide and statewide averaging—all of which most certainly will adversely impact many basic exchange users and may work against the very goals that have been established and endorsed by Congress and most regulatory agencies. Surely all of us must take care not to undermine the fundamental concepts responsible for the unparalleled progress of telecommunications in this country.

II. THE IMPACT OF COMPETITION IN TERMINAL EQUIPMENT AND PRIVATE LINES UPON CONSUMERS GENERALLY

New policies seeking to inject selective competition in terminal equipment and intercity markets will affect not only those segments but the telecommunications system as a whole. As I have indicated, the most far-reaching of these effects is that competition, of necessity, will end the traditional pricing pattern that has fostered universal service by providing favorably low rates for the residential consumer.

Ultimately a competitive system will not permit revenues from one service to contribute to another. The new competitors have chosen to operate only in selected, more profitable segments of the business. They will base their charges upon favorable costs inherent in the selected market segments. In order to preserve as much contribution as possible, existing carriers must adjust their own rates to meet this new pattern or the new competitors will capture most of the contributions which help to keep exchange service rates lower than they would otherwise be. And so competition inevitably will lead to a pricing pattern based more closely upon the relevant cost of each particular service. Such a system obviously will limit the use of overall pricing structures to achieve broader social goals. Simply stated, the small residence user will pay more; some big business users will pay less.

The magnitude of the contribution now made by other services to hold down the cost of local residential telephone service is illustrated in this chart. (chart 4) The bar on the left shows that the average residential customer pays \$7.85 monthly to obtain basic local exchange telephone service. The bar on the right shows the average cost incurred for this same basic service—a total of \$13.70 monthly for the cost of the telephone set, the access line to the switching center or local exchange, and the cost of operation.

This brings to light a rather dramatic fact. The average residential customer is paying substantially less than the costs associated with his basic local

service. To put it another way, if basic local service were to be priced according to costs, and all contribution from the more profitable services were to be eliminated, then the monthly bill for basic local service for millions of residential customers could be increased by about 75 percent, or several billion dollars every year.

I am not predicting this will happen immediately or in precisely this dimension. But our analysis indicates that the ultimate impact of changes in pricing patterns, brought about by competition, could be substantial indeed. I submit for the record, Mr. Chairman, an appendix to my statement in which Mr. M. G. Killoch, Assistant Vice President, Service Costs Division of AT&T, explains in detail the conclusions and the methodology of this study.

I also submit for the record a report from Arthur Anderson and Company made on July 26, 1974, following a review of the study by Mr. Killoch, and I would like to quote for the record from the statement in which Mr. Richard Walker, a senior partner of Arthur Anderson and Company in charge of their utility and common carrier work states: "Based on the work which I have done and which has been done under my supervision and direction, and on the definition of service and costing methods set forth in the statement of Mr. Killoch, this is a reasonable application of this particular costing methodology and provides a basis for the substantive conclusion that one-party resident exchange service costs materially exceed revenues on each of the two bases indicated. Further, our tests indicate that the substantive conclusion is sensitive to the use of alternative assumptions as to cost component and cost allocation factors."

That competition will force an increase in rates for residential customers is the conclusion of a Committee of the National Association of Regulatory and Utility Commissioners, state officials who are directly responsible for regulating residential rates. The NARUC committee concluded after studying the question that competition in certain terminal equipment markets and the interstate private lines business would bring "a substantial adverse economic impact on local exchange telephone subscribers."

This chart (chart 5) portrays who would be hurt the most among different residential customers. Obviously, low-income customers tend to restrict themselves more to basic local telephone service. High-income customers can afford more long-distance calls and various extras such as multiple sets in the home and more elaborate equipment, labeled "vertical services" on the chart. As competition compels rate adjustments to reflect costs for each service, this reduces the contribution that other services can make to basic service. Rates for the extras enjoyed by the more affluent will tend to be reduced and rates for basic service must be increased. Thus a penalty will be imposed primarily on the low-income customer, the elderly, and others on fixed incomes. If the increased price for basic service should place it beyond the reach of many lower-income consumers, the trend would be most unfortunate, and would appear to violate the spirit of the Communications Act with its mandate to make service available to "all."

The significance of shifting a substantial rate burden from business firms to residential customers generally is greater than most of us would at first appreciate. A 1972 survey indicated that 20 percent of the households with telephone service had incomes of less than \$5,000 per year. And the average income was between \$7,500 and \$10,000.

In the group under \$5,000, about half of our customers were over 64 years of age. Thus, the survey illustrates dramatically that many customers with low incomes, especially those on fixed incomes, could be seriously hurt by increases in basic telephone rates caused by the loss of contribution from other telecommunications services.

TERMINAL EQUIPMENT

Now let me explain how competition in the terminal equipment field impacts the residential customer. If you were in the communications equipment business, as an unregulated supplier, and you were seeking an opening to compete with the telephone companies, wouldn't you pursue business where the telephone companies' rates are higher in relation to relevant costs? It is easier for unregulated manufacturers of terminal equipment, who have no obligation to file tariffs or otherwise give notice of price changes, to underprice the telephone company and still make sizable profits. This is precisely the pattern that

has been developing in the past several years. Competitors are vigorously seeking to take business away from telephone companies in carefully selected fields.

Although competition has been introduced in these markets only in recent years, experience already shows that the dangers we foresee are very real. For example, we estimate that we have lost to unregulated competitors more than 20,000 PBX and key telephone systems in the Bell System territory. A study by the Stanford Research Institute points dramatically to where present trends could take us. The Institute finds that the number of telephones served by PBX's supplied by other companies will have increased five times in only three years, from 1971 through 1974. And from 1971 through 1985, the Institute estimates, the number of telephones served by other PBX's could increase from less than 200,000 to about 8 million. A report by Arthur D. Little, Inc. notes that sales of terminal equipment by other companies could reach the billion dollar range by 1980.

If the telephone companies do not respond to this competition, or if they are not permitted by regulators to compete on equal terms, the bulk of the market for business terminal equipment would be taken over by the new entrants. On the other hand, if the telephone companies do respond to competition in this market they must adjust rates for these devices. The important point is that in either case, rates for elaborate equipment for business firms will be reduced—and where contribution from these services have helped to hold down rates for residence services, it will be lost.

Thus competition in terminal equipment could mean that consumers who have no need for business terminal equipment, will pay more for their basic telephone service. The extent of the problem is indicated by our estimate that if other companies eventually take over 50 percent of the market for terminal devices, consumers would have to pay about \$1 billion a year for their basic telephone service. And as already indicated, this burden would fall particularly on low-income consumers.

INTERCITY PRIVATE LINES

In the intercity private line business, similar economic factors will be at work. The private line business as a whole makes a contribution to hold rates down for basic local residential service. To the extent that competitors take over the business, or competition forces down Bell's own rates in this field, the contribution is lost.

But there are additional factors that deserve your serious consideration.

For one thing, Congress recognized over 50 years ago that the cost of duplicated telephone facilities would ultimately be borne by the telephone users. And, Congress over the years has undertaken to prevent this waste by providing regulation of entry, extension of facilities, rates and service.

The facilities in service and proposed by the specialized, miscellaneous and domestic satellite carriers are estimated to cost about \$1 billion to construct. These facilities will not be used to provide services for remote areas now unserved or for new or different services. But they will have capacity sufficient to creamskim all of the private line services between the major cities they serve and to divert existing long distance and WATS traffic as well. The promise of developing new and specialized services as alleged during hearings before the FCC is no longer maintained; and to our knowledge has not been fulfilled. The duplication of facilities is the very consequence Congress had hoped to eliminate when it elected to establish the common carrier principle.

Moreover, competition by other carriers in the private line business means the loss of declining unit costs due to the introduction of new technology. This chart (chart 6) demonstrates how the cost per unit of service varies enormously depending upon the volume of business. For example, a cable with a capacity to carry 1,800 telephone calls costs about \$17.22 per circuit per mile; but a cable with a capacity for 132,000 telephone call costs only \$1.68 per circuit per mile, a reduction of more than 90 percent. Obviously, diversion of private line business among the duplicating routes of multiple carriers will postpone or preclude the savings that could be obtained from high-volume, low-cost new transmission technology. This is another cost that must be borne by the public.

This factor will be even more important in the future than now, as new technology becomes available. Bell Laboratories is far along in developing

the millimeter waveguide, a precision engineered two-inch "tube" capable of carrying 230,000 telephone conversations simultaneously, with a potential about double that number. The splintering of private line business among various carriers and the diversion of long distance calls necessarily may delay the introduction of advanced technology that would bring great savings for all the public.

Most important of all is the fact that competition in the intercity markets as in terminal equipment will again undermine a traditional pattern of pricing. Obviously, the cost per unit of service varies significantly over different routes, depending on the volume of business and the types and capacity of the facilities used to serve various points. For example, private line service between Sault Ste Marie, Michigan and Rhinelander, Wisconsin is served over facilities whose cost on the average is about twice that of different types of facilities that provide the same service for a similar distance between Detroit, Michigan and Milwaukee, Wisconsin. Despite these variations in cost, the practice in the past—approved and urged by regulatory bodies—has been to average cost in order to provide uniform rates on a nationwide or state-wide basis. Therefore, under nationwide averaged uniform rates, users with service from Sault Ste Marie to Rhinelander and from Detroit to Milwaukee have paid the same private line charges. But with competition forced the Rhinelander users have to pay substantially more while the Detroit to Milwaukee users pay substantially less for the same service.

This averaging of costs to produce uniform rates has traditionally been affirmed to have valuable economic and social benefits. It has enabled all customers—no matter where they are located—to share in the benefits of advances in technology. It assured that customers in smaller towns paid no more for interstate service than users in the big cities.

What are the broad implications of intercity competition? As rates are lowered for consumers in the more densely populated centers, this loss in revenue must be made up by increasing rates for consumers in large areas of the country which are less developed. Also, more and more business customers will switch from regular long-distance calls to take advantage of the lower rates for private line service on the high-volume routes. So there will be a loss of revenue not only from private lines, but also from regular long-distance service. And most of this revenue must be made up, of course by other consumers.

We estimate that if present trends continue, by 1976 the Bell System will sustain a loss of about \$350 million annually in interstate revenue as a result of the expansion of the new intercity competitors. And about \$190 million of this loss will be interstate contribution that would have to be made up by higher charges for other services. But this would be only the beginning. The Arthur D. Little report, I mentioned earlier, projects that the specialized common carrier business will exceed \$1 billion by 1980.

In addition, interstate long distance revenue helps cover local service costs. The average interstate long-distance call produces about \$2.00 in revenue. Of this amount, about 50 cents goes to help pay the costs of facilities used to provide local exchange service. Thus, every interstate call that is diverted to the intercity competitors increases revenue requirements for basic local service by about 50 cents.

III. BELL AS A COMPETITOR

Mr. Chairman, our concern as I have indicated, is that the kind of competition now being thrust upon the communications industry is not true competition at all, but contrived and selective.

Let me cite briefly the roadblocks to AT&T in seeking to compete.

The Bell Companies would be able to compete effectively and profitably because Bell System costs over the high density routes are significantly lower than the rates charged by competing carriers. But our efforts to introduce competitive private line rates on high density routes have encountered a series of delays by the FCC, despite the Commission's commitment that existing carriers would be permitted, indeed, encouraged to compete "fairly and fully" with new carriers. It required 18 months from the time they were proposed, to make these rates effective. Yet within days thereafter our competitors were permitted to place into effect still lower rates on one day's notice.

Our proposal for adjustments in video rates to compete with new carriers and our requests for authorization to provide Dataphone⁴ Digital Service, using new technology of great benefit to consumers, have encountered similar administrative delays.

True competition has also been prevented by the FCC's restrictions on our use of domestic satellites to provide private line services to customers other than the Federal Government, while no such restrictions were imposed on competitors.

The Bell System is disadvantaged in competing in the terminal equipment market. We are closely regulated; our rates are fixed by published tariffs and can be changed only by administrative procedures which frequently entail long delays. Our competitors in this field are unregulated, free to adjust their prices at any time for competitive advantage.

Moreover, we are caught in the middle of an extraordinary jurisdictional dispute. The FCC has declared that there shall be competition for terminal equipment connected to telephone company facilities and has claimed exclusive jurisdiction to determine the terms and conditions of interconnection. At the same time, the state regulatory commissions have jurisdiction to determine the rates structure for local service and assert that they have jurisdiction over terminal apparatus connection with the network. Thus, we have a situation where the Federal agency which seeks to preempt jurisdiction over competition in terminal equipment lacks responsibility for local rates which are threatened by the introduction of that competition.

These conditions and restrictions preclude fair and genuine competition.

IV. SUMMARY

We believe we have shown that the national telecommunications system provides the best service at the lowest cost when it is planned, built, and operated as a single system, highly coordinated, under close state and Federal regulations. Under this approach, consumers avoid the cost of unnecessary duplication of facilities; they enjoy economies of scale; they benefit from careful coordination and balancing of all the integrated aspects needed to originate, switch, transmit, and receive all forms of telecommunications.

Most important, this unified system permits the deliberate structuring of rates under government regulation and policy to favor residential consumers, giving virtually every household the ability to obtain telephone service. This is a result which could not have been achieved in a competitive environment where prices are necessarily more cost related.

Nevertheless, there are strong and growing pressures to undermine these basic principles, the very concepts that have been responsible for unmatched, dependable and reliable service to the nation.

This is why we are urging this Subcommittee, the Congress generally, the regulatory agencies and the public to consider closely the economic and social results of undermining the cohesion of the national telecommunications system. Undoubtedly, some business customers would gain lower rates from the continued expansion of competition in terminal equipment and the intercity market. And other business firms would benefit from selling this equipment or service. But the responsibility of government is to judge the issue not according to benefits to the companies involved, either the Bell System or its competitors, but upon results for the public as a whole.

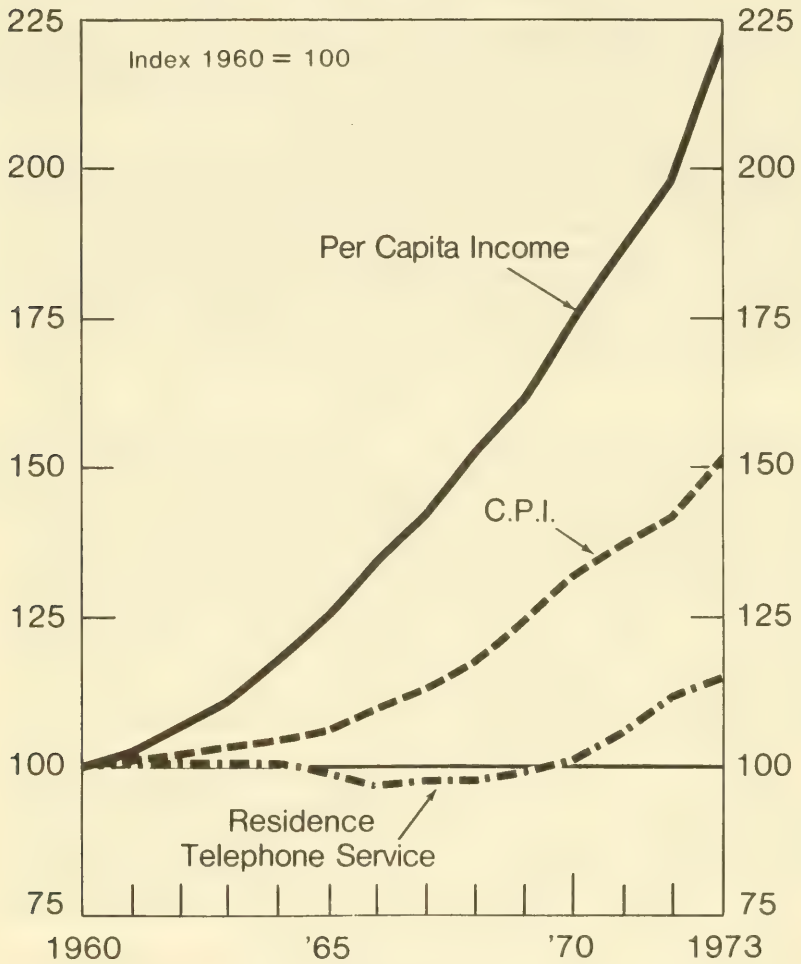
In sum, Mr. Chairman, we believe competition in telecommunications would not serve the best interest of the vast majority of consumers and would not further the national communications goals.

However, if the policy of the Communications Act is to be changed to encourage competition, certainly that competition should be open and fair to all. The government should not allocate markets to some competitors and deny them to others; the government should not shield new competitors from the forces of a free market; the government should not become a "giant hand-capper." This, we submit, would also be contrary to the public interest.

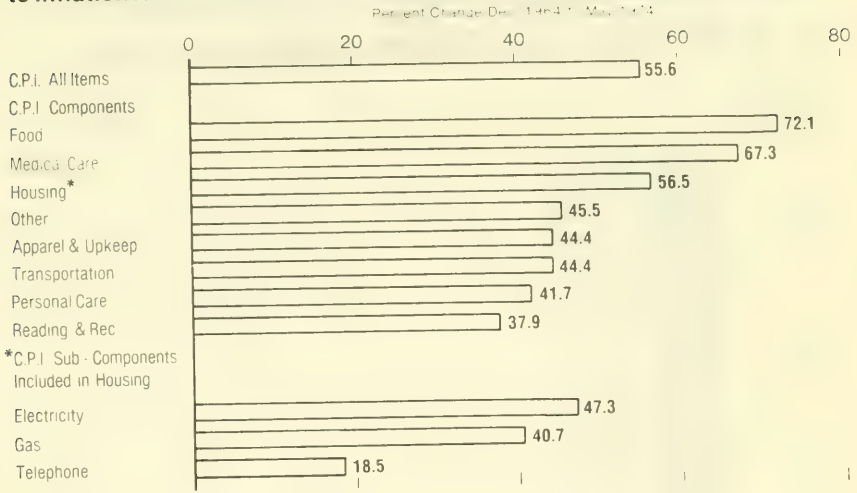
Again, Mr. Chairman, the traditional telecommunications structure, under regulation, we believe has served this nation well, and we respectfully urge the Congress to weigh carefully the consequences of mandating any change.

⁴ Registered mark of American Telephone & Telegraph Company.

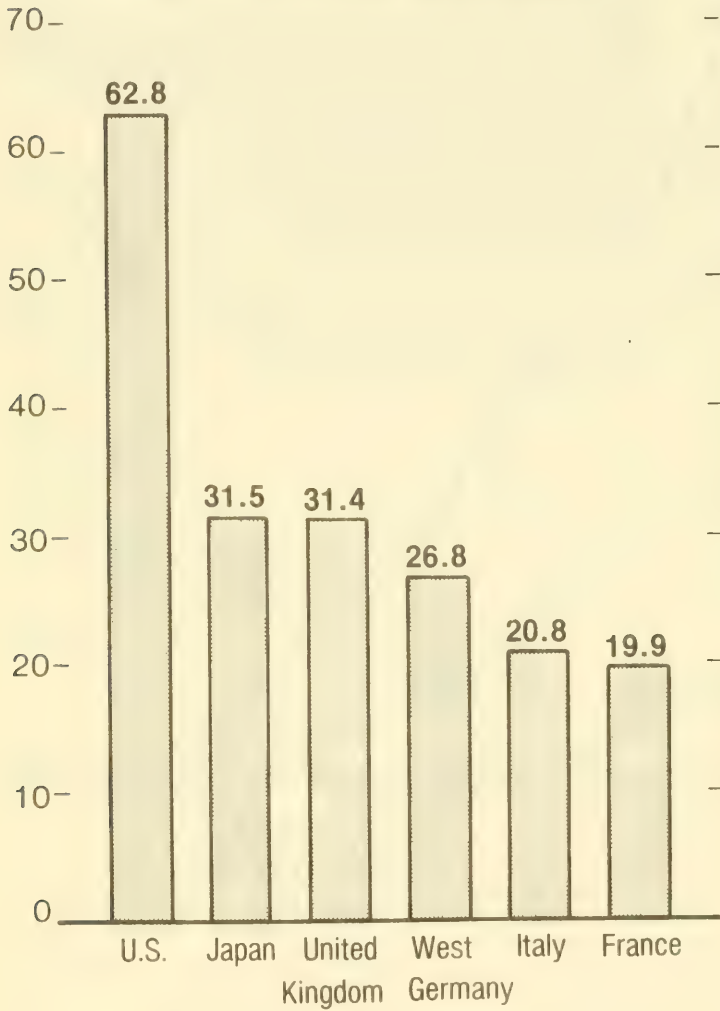
Cost of Bell Telephone service vs. Income per capita and consumer prices ...



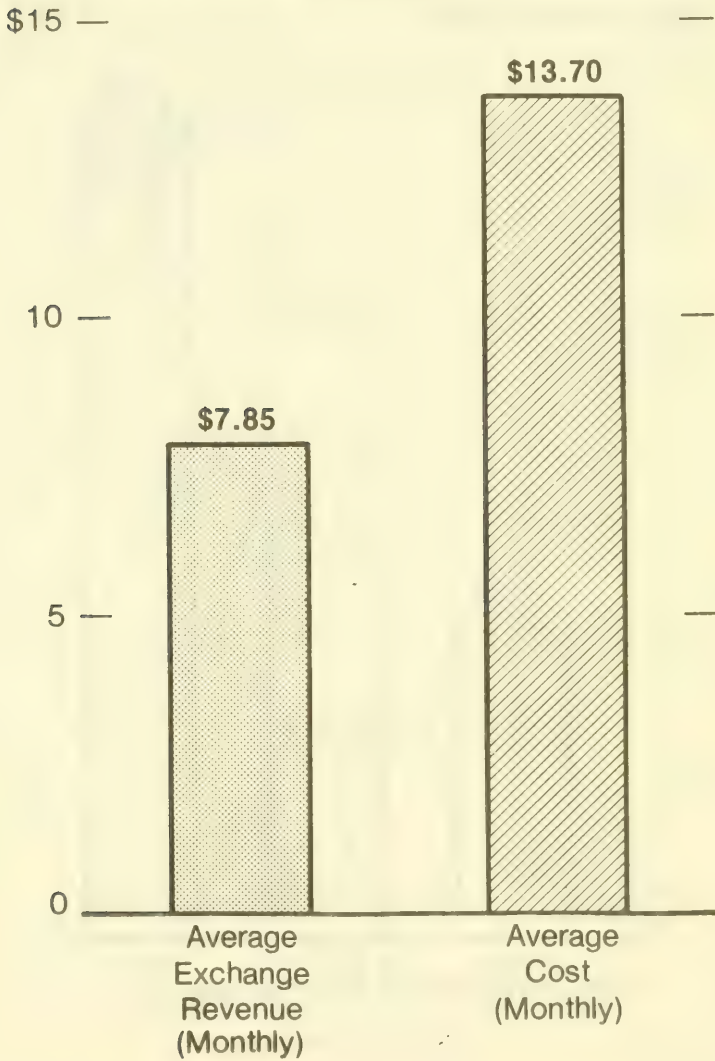
Telephone rates have not contributed significantly to inflation ...



Total telephones in service (per 100 pop.)
1-1-73 major industrialized nations ...



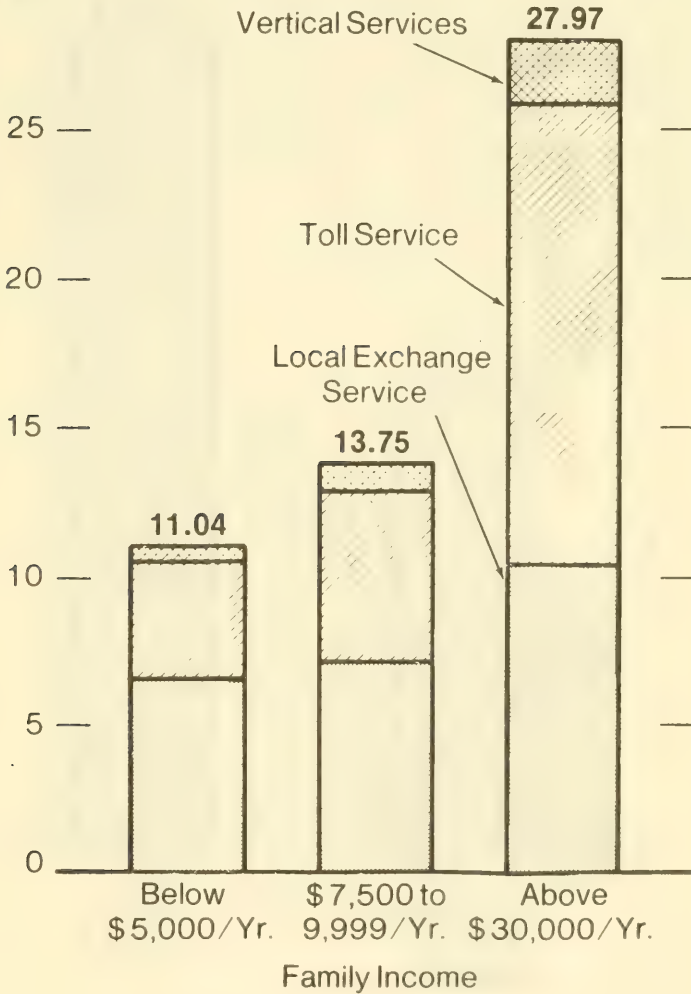
Revenues from basic residence service versus cost . . .



Low income customers would be hurt most by selective competition . . .

Monthly Telephone Billing

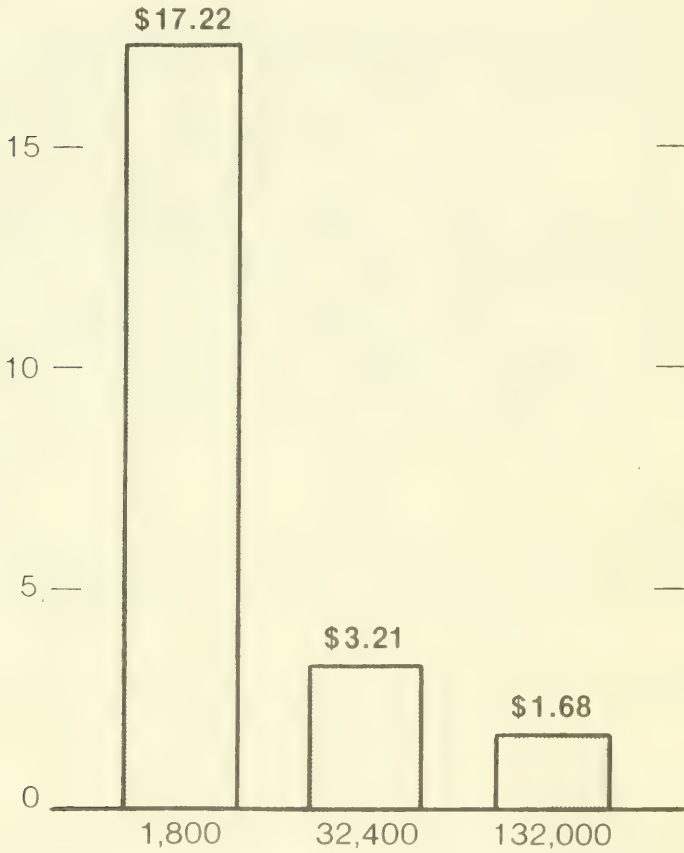
\$30 —



High capacity technology produces low unit costs . . .

Cost Per Circuit Mile

\$20 —



Telephone Call Capacity Per Cable

Appendix

A.T. & T. Co. STUDY OF THE
REVENUES AND COSTS OF RESIDENCE TELEPHONE SERVICE

(M. G. Killoch, July 26, 1974)

SUMMARY OF STUDY

The purpose of this study is to develop the "costs of service" for one party residence exchange telephone service and relate such costs to the revenues of this service.

The costs of service are developed by both embedded direct and fully allocated-relative use methods. The former method is advocated by the Bell System. The latter method is advocated by F.C.C. Staff witness, Dr. Melody.

The results derived by using either method indicate that, for this service, the direct revenue support covers less than 60% of the costs. Stated differently, revenues would have to be increased about 75% to equal costs. Therefore, single party residence exchange service *clearly requires support from other services*, such as toll, premium services, etc., to assist in covering joint and common costs. There are no net revenues available from this service, standing alone, to subsidize any other service or to support common corporate overheads.

For the Bell System, the revenue underrun of costs represents about \$5.85 per month applicable to about 45 million one-party residence main telephones. This amounts to about a \$3 billion annual net revenue support from other intrastate services and from interstate separations flows. As a broad estimate of the total Bell plus Independent industry effect, if the underrun per month is applied to the 65 million households in the United States with telephone service, the result is \$4½ billion annually.

The evidence of either cost method is that the regulatory goal of pricing home service low relative to its costs to promote universal service is verified.

GENERAL DESCRIPTION, DETAILED METHODS AND RESULTS OF THE
STUDY OF REVENUES AND COSTS FOR RESIDENCE TELEPHONE SERVICE*General*

The Telephone common carrier industry and state regulatory agencies have pursued the objective of universal telephone service by setting residential telephone rates low in relation to costs. There have been allegations that residence service is "subsidizing" business service. The opposite is true.

The Bell System has conducted a study of the relationship between revenues and the estimated costs of single party residence exchange telephone service. The costs are of two varieties: 1. Embedded direct costs, and 2. Fully allocated costs, based on relative use.

Embedded direct costs are those historical costs directly attributable to a specific service. In this study, these are the direct costs of single party residence service assuming that the telephone facilities were used only for exchange service. They exclude common corporate overheads.

Fully allocated-relative use costs are historical costs allocated on the basis of the use of joint facilities for a specific service as a proportion of the use of these facilities for all uses. These costs include common corporate overheads, assigned on the basis of the relative investment of residence service to total investment.

Various kinds of cost methods have been advocated by different parties for different uses.¹ The Bell System advocates the embedded direct cost method as an appropriate retrospective cost measure.

Fully allocated-relative use costs, as the basis of pricing services, have been advocated by FCC Staff witness, Dr. Melody.

The need for an accountability test on a retrospective basis was recognized in Docket 18128. While costs developed on a retrospective basis do not serve

¹ For a discussion of cost methods see, for example, Hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, United States Senate, 93rd Cong., First Sess., on S. 1167, Part 2, The Communications Industry, Page 1600 et seq., Full Costing Competition and Regulatory Practice, W. J. Baumol, A. G. Walton, pp. 1600 to 1616.

to determine incremental revenue and cost effects on the firm in the future due to current pricing decisions, they serve to measure the present state of cost revenue relationships. The embedded direct cost analysis provides a sound method for an accountability test. This test indicates the results of past decisions. These decisions concerned separations assignments and revenue contributions from other services such as toll and premium services to help support joint cost and common corporate overheads. This analysis also illustrates that, without these supports, rates for basic residence one party service would be higher than they would otherwise be.

Single Party Residence Exchange Service

The supply of switched telephone service is marked by joint and common overhead costs. The basic access line involves a joint cost because it jointly provides for three services, namely exchange, state toll and interstate toll services. The access line is required even if only one service is used. Thus, in the event of a customer using only exchange service, the entire access line cost represents a direct cost of that service.

The basic access line is defined to include:

1. A rotary dial, non-premium charge telephone set
2. Inside wiring in the home
3. Connection from the home to the cable plant (called the "drop")
4. The cable plant (called the "loop")
5. Central office non-traffic sensitive terminations and equipment

When calls are placed by customers, additional central office and trunking facilities are brought into use. These are termed *the usage sensitive costs*. When this use is for calls placed and terminated wholly within the exchange, the costs thereof are termed *exchange use costs*.

The embedded direct costs include 100% of the access line and 100% of the exchange use costs but none of the common corporate overheads.

The fully allocated costs include only a use-allocated portion of the access line (about 88% on average), plus 100% of the exchange use costs and an allocated portion of the common corporate overheads based on relative investment.

Monthly costs consist of two components, the *monthly capital related costs* which include depreciation, return and income taxes based on a 9½% cost of capital and *monthly direct operating expenses* such as maintenance, other operating expenses and property taxes. The common corporate overheads includes broad management function expenses which are not directly attributable to specific services but rather are related to the entire firm. (Executive, Law, Treasury, General Accounting and General Department expenses are in overhead costs).

Results

The results of a Bell System analysis (Sept. 1973 level) of the comparison of revenues and estimated costs per month for a single party residence telephone are:

	Embedded direct	Fully allocated relative use
Costs/month:		
Exchange use.....	\$3.90	\$3.90
Access line—100 percent.....	9.80	
Access line—88 percent.....		8.65
Overheads.....		1.05
Total.....	13.70	13.60
Revenues/month:		
Recurring.....	7.45	7.45
Nonrecurring.....	.40	.40
Total.....	7.85	7.85
Costs less revenues/month.....	5.85	5.75
Percent increase in revs. required for revenues to equal costs.....	75	73

The results conclusively indicate that revenues from single party residence exchange service, standing alone without support from other services, such as toll, premium services, etc., do not cover the costs of this service. Obviously then there are no contributions above costs available to support other services and the allegations that residence service subsidizes business service are untrue.

It can be seen that the revenues of \$7.85 less the exchange use costs of \$3.90 leaves only \$3.95 for support of the access line costs of \$9.80. Thus, while single party residence exchange use represents the bulk of the total use of the access line, it supports only 40% of the costs.

In view of the long history of the application of the value of service pricing and statewide averaging principle by the telephone industry and state regulators, with the view of developing universal home telephone service, the results are as expected. It is likewise clear, that if the sub-markets of toll, private line and premium services and products are subject to intense competition, the revenue contributions now received for support of the joint access line costs of home telephone service will be eroded. In such an event, local exchange rates will have to be increased and the effects would be felt particularly by the low income consumer of home telephone service.

Cost Methodology

About 900 elements of study data are required for each geographic area studied. These are obtained from Division of Revenue Data sources, corporate reports and special studies.

While total customer use is measured for engineering purposes, this use is not disaggregated among residence, business and coin services. A special study was required to develop single party residence use at the same time as measuring the total use for all services. Traffic measurements were made in many locations in the Bell System and then aggregated together. While the single party residence service represented approximately 69% of the total number of main telephone services, its use per main telephone in the busy hour was less than the average. Accordingly, it was determined that the single party residence service was responsible for approximately 53% of the total costs which are a function of the busy hour. This busy hour use dictates the amount of plant investment required for a given grade of service.

The general approach to the cost study was to develop the embedded investments per single party residence main telephone for the various components of the access line and usage sensitive facilities.

In addition, various operating expenses related to single party residence service were developed, such as: Revenue Accounting, Business Office, Traffic, Directory, Service Order, Subscriber Line Testing, Maintenance, and Property Taxes.

Prescribed depreciation rates were applied to obtain depreciation expenses by classes of plant established by the FCC Uniform System of Accounts.

Net investment was developed by subtracting appropriate depreciation and tax reserves from total investment and a 9½% return was developed using this net investment. Income tax calculations reflect federal, state and local taxes and include appropriate tax allowances under current tax regulation.

Chart 1 gives a broad representational view of the development of capital related costs and operating expenses for the various elements (station, loop, etc.) that make up the service.

Chart 2 gives a broad representational view of how the monthly costs for each element are assembled to form either the embedded direct costs excluding overheads or the fully distributed-relative use costs including overheads.

Ten computer sub-programs were developed to process the data along with an executive program to produce final cost results with appropriate analytic breakdowns of the data. About 500 input data elements are prepared from the 900 total data items and are used to allow continuous processing to the final results.

The most important consideration was the identification of costs attributable to the one party residence exchange class. This was required for numerous cost elements as described below.

Station costs were developed for a rotary 500 type telephone set. The installed cost of inside wiring and drop wire were developed from accounting records using special studies of the relative effort required for residential installations. The telephone set represents an investment of \$13, the inside wiring investment is about \$14, and the drop investment is about \$32.

Loop costs represent the average of all loops. There is no way to separate the costs for individual classes of subscribers when cable facilities are jointly engineered to meet the aggregated cable demand. The unit of demand represents one loop. The cost of that unit of demand is represented by the total cost of all exchange cable facilities (which include the economies of scale achieved by the aggregated demand) divided by the total number of loops. Loop costs include costs for buried, underground, aerial cables as well as conduit and pole facilities. The average investment per loop is about \$254 as derived from the standard Division of Revenue data. The non-traffic sensitive central office equipment cost is also developed from Division of Revenue data and applied equally to all classes of main telephones. This investment is \$54 per main telephone.

The total access line investment is \$367 and includes the station, loop and non-traffic sensitive COE costs.

Traffic sensitive costs, also developed from Division of Revenue data for various types of central office equipment (step, panel, crossbar and electronic types), were assigned to residence service based upon the relative use of the singleparty residence customers to total use by all exchange users. This relative use data was developed from a special traffic study. The associated exchange trunking and exchange tandem switching costs were developed in a similar manner. Switchboard costs were developed from Division of Revenue data and a ratio of single party residence calling rates to total calling rates applied to dial assistance traffic, directory and intercept services. The total traffic sensitive investments per residence telephone are estimated to be approximately :

C.O.E. Traffic sensitive-----	\$96
Trunking facilities-----	40
Switchboards-----	5
Total-----	141

Commercial Expense was determined by means of a measurement of work units per period per main telephone applicable to residential accounts and the cost per work unit. These work units include account servicing and bill collections. Revenue Accounting costs to prepare and render a bill, to process automatic message accounting tapes and message register photos were developed from the Comptrollers cost analysis measurement plan.

Subscriber line testing expense was developed from total testing costs and trouble reports. The testing expense per trouble report was applied to the trouble reports per period per residence main telephone.

Traffic operating expense was developed by analysis of company reports of exchange traffic operations cost per period. This was apportioned by traffic use for 1 party residence main customer as against all users and then related to 1 party residence main telephones to develop a unit cost per month.

Directory Expenses were developed from White Pages directory production, typesetting, and compositing costs and proportioned to residence in their relation to total accounts. Other costs such as printing, binding, delivery were assigned in proportion to accounts plus telephone since multiple sets of directories are provided. These costs per period were divided by residence main telephones to provide a unit cost per period.

Service order costs were developed from studies of service order processing time, the number of orders per month and appropriate labor rates.

Station Moves and Change Costs were developed from the number of inside moves per month per residence main telephone, the time required for the operation and an appropriate labor rate.

Common corporate overhead costs are the total unallocable overhead costs related to total investment as a ratio. This ratio was applied to the investment

per residence telephone. Additional common expenses for the AT&T general departments were included based on the total of all other costs.

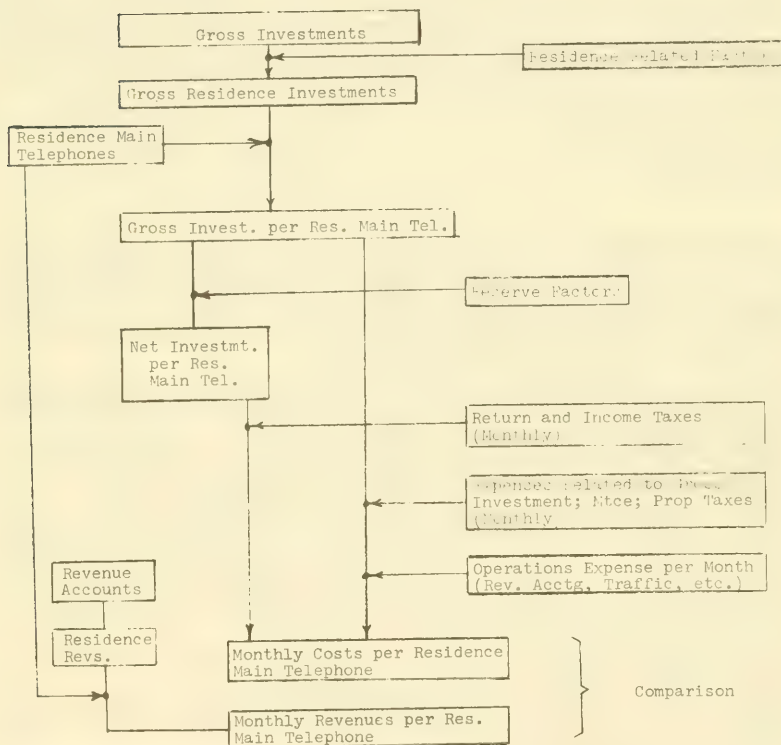
Table 1 contains a summary of investments and monthly costs on both the embedded direct cost and fully allocated relative use bases.

Recurring revenues were developed from 1 party residential rates by states. These rates were aggregated with additional 1 party residence message unit revenues from the corporate accounts. These total revenues were divided by the single party residence main telephones to determine the average revenue per telephone.

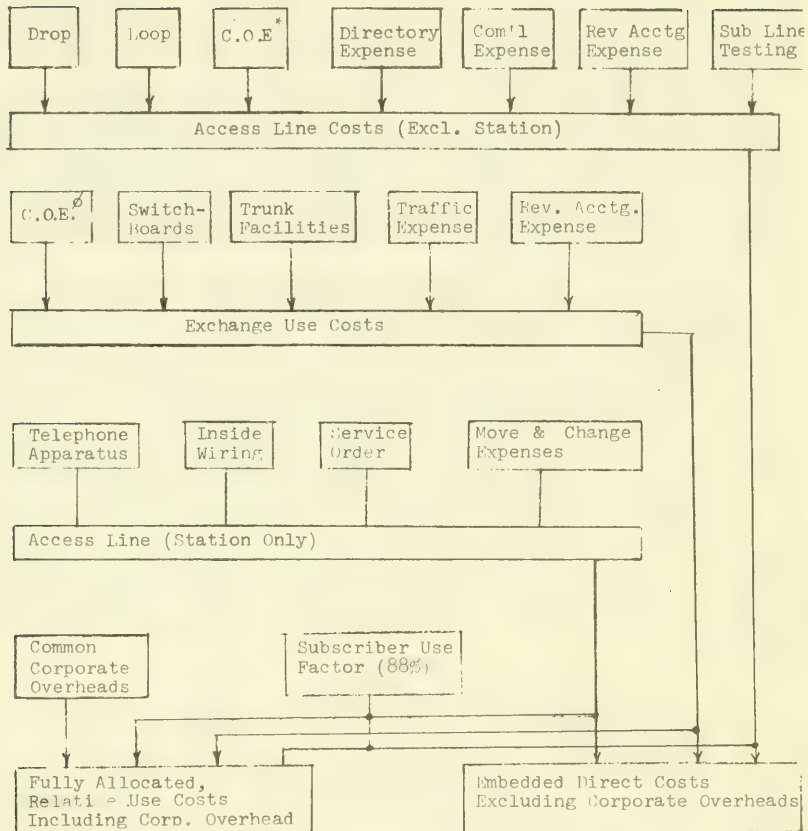
Non-recurring revenues were developed from a study of company reports for one month of new installations, reconnects and reinstallations at unit rate levels. The number of inside moves for one month were likewise developed and rates were applied. These revenues were then aggregated into a total non-recurring revenue per month per single party residence main telephone. Investment, expense and revenue data are for September 1973.

Part 1

Single Party Residence Cost Study
Cost and Revenue Comparison



Single Party Residential Cost Study
Summary of Costs



*Non Traffic Sensitive Central Office Equip.

/Traffic Sensitive C.O.E.

SINGLE PARTY RESIDENCE COST STUDY—SUMMARY OF INVESTMENTS AND MONTHLY COSTS

	Embedded direct costs		Fully allocated, relative use costs	
	Investment	Monthly costs	Investment	Monthly costs
Access line:				
Drop, loop, NTS COE.....	\$340	\$8.50	\$299	\$7.50
Station.....	27	1.30	24	1.15
Subtotal.....	367	9.80	323	8.65
Exchange use.....	141	3.90	141	3.90
Subtotal.....	508	13.70	464	12.55
Common Corp. overheads.....				1.05
Total.....		13.70		13.60

EXHIBIT 5.—*Prepared Statement of Mr. Hough*PREPARED STATEMENT OF RICHARD R. HOUGH ON BEHALF OF
AMERICAN TELEPHONE & TELEGRAPH CO.

My name is Richard R. Hough. I am a Vice President of American Telephone and Telegraph Company ("AT&T") and the President of the Long Lines Department ("Long Lines") of AT&T. My office address is 32 Avenue of the Americas, New York, New York, and my residence address is Van Beuren Road, Morristown, New Jersey.

I hold the degree of Bachelor of Science in Engineering (1939) and the degree of Electrical Engineer (1940) from Princeton University. In 1940 I joined Bell Telephone Laboratories, Inc., and following various technical and management assignments became Vice President of Bell Laboratories in February, 1957. In September, 1957 I was appointed Assistant Chief Engineer of AT&T; in October, 1959 I became Vice President-Operations of The Ohio Bell Telephone Company; and in 1961 I returned to AT&T as Vice President in charge of engineering, which position I held until I assumed my present responsibilities in December, 1966.

By reason of my several duties and responsibilities in connection with the provision and operation of the nationwide network of interstate facilities, I am familiar with the nature and structure of the Bell System and its relations with independent telephone companies, and the nature of the needs of the telephone using public. The purpose of this statement is to describe the complex nature of the nationwide telecommunications network and why it is essential that direct responsibility for managing this network be in a single entity. I will also describe the adverse impact on this network and the public which would occur from the insertion of facilities provided by the Specialized Common Carriers into this network and from the unrestricted introduction of non-carrier supplied terminal equipment. In particular I will describe technical and operational difficulties, limitations on opportunities for more efficient and cost saving technical and operational innovations, and resultant increases in charges for the vast majority of the telephone using public which will result from the introduction of competition in the telecommunications industry. The problem of the added burden placed on the local telephone subscriber is discussed in the Statement of Mr. E. B. Crosland being submitted concurrently herewith.

BACKGROUND

For the last several decades, rapid and efficient telecommunications has been an essential and growing civilian and government need. This growth can be attributed to a number of factors, not the least of which has been the availability of a reliable, interacting nationwide network with reasonable rates to the users. Some of the other factors influencing this growth have been the population explosion and migration; the rapid increase in commercial and industrial complexes; and the development of computer technology, which require extensive information exchanges. But the most important factor has been the individual public need to communicate with one another.

Prior to World War II the communications industry had grown in a gradual process to the point where universal telecommunications service was a reality. From any part of this country you could call any other person in any other part of the country, and could call to many countries overseas. Telephone service, even then, had ceased being a luxury and had become a part of everyday life. The primary telecommunications needs were, however, local in scope; that is, neighbor calling neighbor, or customer calling a local merchant, or one local merchant calling another. These local services were provided and are still being provided by the Bell System Associated Companies and the independent telephone companies pursuant to exclusive franchises granted by the various states and municipalities, under regulation by the appropriate body.

In addition to the need for adequate local service, there was also a need for individuals and businesses to communicate with others in areas served by different telephone companies. These areas could be separated merely by a common geographic boundary or by 3000 miles. It was possible for one telephone company to interconnect with an immediately adjacent company to interconnect with an immediately adjacent company at a location convenient to both, so that the customers of one could communicate with those of the

others. However, when the companies were separated by another company, or several companies, or were states away from one another, interconnection was a more complex problem. It was early recognized by the Bell System that an overall network manager was required if communications needs were to be satisfied at minimum cost regardless of the proximity or distance of the customers. It was out of this concept that the fully integrated nationwide network was developed.

THE NEEDS OF ALL COMMUNICATIONS USERS CAN BEST BE SERVED BY A SINGLE
INTEGRATED NETWORK

A single integrated network of facilities is the keystone to the rapid, efficient and reasonably priced telecommunications services, MTS¹ or Private Line, which we have in this country today. This network is, in fact, a very important national resource, a unifying factor in our vast economic, technological and sociological systems. The success with which we have met our objective of providing the best possible service at the lowest possible rates has made a major contribution to the economic strength of America's business and industry.

Yet, this network can be provided and operated economically and reliably only if numerous carefully organized activities are performed properly. The switched network is a highly complex and interdependent system. It routes communications over more than 350 million interexchange circuit miles, connecting essentially all of the more than 130 million telephones in the United States. Overall coordination of technical standards, timely planning and implementation, coordinated maintenance and testing, and other complex functions are essential. Continuous changes and adjustments are needed to respond to changes in customer requirements, growth in demand and emergency conditions.

The fully integrated nationwide network as it exists today is provided by the local telephone companies, Bell and non-Bell alike, in partnership with each other and with Long Lines. This partnership provides end-to-end telecommunications services to the public, sharing the revenues derived from the jointly provided services in proportion to the investment and operating expenses of each company participating in the provision of the services. The cohesive forces which keep this partnership functioning smoothly are the common economic interest of all parties in its success and the way that the geographic franchise and common ownership minimize contention between the parties as to the responsibilities of each. In the partnership, Long Lines is responsible for planning and managing the overall network and providing the facilities which link the other Bell System companies together.

The continued participation by Long Lines as an integral part of the Bell System is absolutely crucial to the continued high quality development and operation of the integrated network. The speculation indulged in by Clay T. Whitehead, Director of Office of Telecommunications Policy, Executive Office of the President, that "the fact that long lines is owned by AT&T is not of significant benefit to anyone," and "I don't see that separating the ownership of long lines would cause any major problems one way or the other" (Tr. 1631-32; See also Tr. 1634), is wholly unrealistic and is without any factual foundation. As was clearly demonstrated in the materials submitted by the Bell System to this Committee in October 1973, Long Lines has the overall responsibility for the planning, engineering, construction and operation of the intercompany network, and that this effort has contributed to this nation's having the highest quality, most reasonably priced telecommunications services in the world.² Moreover, Dr. Whitehead's statements clearly ignore the fact that Long Lines and the Bell Operating Companies are jointly involved in providing end-to-end telecommunications services, sharing the ownership of switching equipment and facilities in accordance with the assignment of responsibilities in the network. This unique, integral relationship produces results which would not otherwise be possible, making practical use of equipment and facilities with greater capacity and lower unit cost. Common ownership of Long Lines and the Bell Operating Companies makes possible the

¹ Message Telecommunication Service.

² Hearings Before the Subcommittee on Antitrust and Monopoly of Committee on the Judiciary, U.S. Senate, 93rd Congress, 1st Session, on S. 1167, Part III, The Communications Industry, pp. 1684-92, Supplemental Statement on behalf of Bell System, Part III—Benefits of Bell System Integration.

sharing of equipment and facilities and the optimization of the nationwide network without serious concern or debate over ownership or who must incur costs for the overall benefit. It makes the transfer of ownership, as traffic requirements grow, routine and possible at net book cost. Thus total investment is minimized, innovation facilitated and network performance optimized. All of these factors result in enormous benefits to the telephone using public.

While the great bulk of the network facilities are used to provide switched Message Telecommunication Service (MTS) to the general public, they are also employed to provide private line service for use by a single customer. Our private line service, as an adjunct to MTS, enables those customers to share the benefits of low unit costs made possible by the size and organization of the fully integrated network, and in return the revenues from the private line service make a contribution to the common costs of the partnership, which would otherwise fall wholly on MTS. Thus the way we provide private line services benefits *all* of our customers.

While only a few have advocated the drastic step of severing Long Lines and the intercompany network from the Bell System Operating Companies, a step which would be of doubtful feasibility but certainly destructive for the reasons set forth here and previously, others have sought to tamper with the interstate network in other ways. Several recent FCC decisions and events following therefrom have raised concern as to whether the fully integrated nationwide network can continue to function effectively and provide the benefits of high quality service at reasonable rates. For example, the Federal Communications Commission has authorized non-carrier provided terminal equipment to be attached to the telecommunications network without proper or selective consideration of the consequential effect on the cost and quality of communications service to the general public. While a requirement for a protective device between the non-carrier equipment and the network is permitted, for certain types of terminal equipment no protective device can provide the protection necessary to preserve the integrity of the network and avoid increased cost to the general public. There has, also, been growing pressure from the manufacturers and vendors of terminal equipment for unrestricted interconnection. Likewise, the FCC has authorized unlimited entry of so-called Specialized Common Carriers (SCCs) to provide specialized intercity private line services. Yet, the SCCs have not provided any truly specialized services, but they have now been authorized to interject their facilities into the nationwide switched network for the provision of services which directly impact upon this network. These developments strike at the very heart of the integrated nationwide network and will impair the ability of the established carriers to provide high quality service on an end-to-end basis at the lowest possible cost.

THE INJECTION OF FACILITIES PROVIDED BY THE SPECIALIZED COMMON CARRIERS INTO THE SINGLE INTEGRATED NETWORK WILL RESULT IN SERIOUS TECHNICAL, OPERATIONAL AND ECONOMIC HARM TO THE NETWORK AND HIGHER RATES TO THE USERS

The Bell System has not sought to deny the specialized carriers facilities which they need to provide their authorized end-to-end services. To the contrary, as of July 1, 1974, the Bell System was providing in response to the requests of the specialized carriers more than 2900 local loops in various sections of the country for us in connection with the end-to-end private line services now offered by those carriers. These local loops are provided under tariff and are used to connect the SCC's circuits with its customers' premises. Such local loops, like the circuits with which they connect, are dedicated exclusively to the use of an individual customer. They are separate from the switched telephone network and, therefore, their effect on its efficient and economical operation is minimized. However, when the specialized carriers are permitted to inject their facilities into the nationwide network for services which directly impact upon that network, a serious threat to service is created and additional costs are generated which are not in the public interest.

Effective and economical operation of the switched telephone network is possible only if the network performs as an integrated joint enterprise, and not merely as an assemblage of separate systems. A high degree of continuing cooperation and coordination is essential. As discussed earlier, such cooperation

and coordination is presently possible because Long Lines, the Bell Operating Companies and the independent telephone companies are partners in the joint provision of services. For successful operation of the network, it is necessary for every carrier to conform to standardized techniques and procedures. However, the SCCs have stated to the FCC in connection with their applications for authority to provide "specialized" services that they have no intention of maintaining the same technical standards or equipment interconnection criteria as do the established carriers.³

When the facilities of the SC's are injected into the switched network (as in the case of Foreign Exchange (FX) and Common Control Switching Arrangement (CCSA) services), the failure (a) of equipment or transmission facilities provided and maintained by them or (b) of equipment which they have allowed their customers to attach to their systems can seriously affect the operation of the switched telephone network. Such failures can create network congestion as subscribers seek to reach locations beyond the point of failure. Unless any such failure can be remedied promptly, the congestion can rapidly increase and numerous ordinary customers experience interrupted or seriously degraded service, and service congestion can snowball in its extent and seriousness. The Bell System minimizes such risks by extensive restoration planning and capability, by wide use of multiple routes and portable van-mounted equipment, and through network management techniques, which it has developed over a period of many years of network experience. None of these efforts would be adequate to protect service unless each specialized carrier injected into the system were to make comparable efforts. Unfortunately, the specialized carriers do not provide comparable equipment or diverse routing, nor is it practical for them to do so. In order to protect its own customers, the Bell System would be compelled to provide facilities not otherwise required to minimize so far as possible the risks of route failure within the specialized carriers' systems, and even so a significant risk would remain of congestion or interruption of the services offered to the general public.

If SCCs are injected into the network, many technological improvements in the facilities and methods of operation of the network will be possible only if all of the specialized carriers first agree to modify their own systems to conform to the improvements. It may be anticipated that some or all of the specialized carriers would be unwilling to invest the effort and money required to alter their systems, although the changes might mean significant overall improvements in the efficiency and economy of the network, because they would receive no additional revenues for such investments. The specialized carriers cannot reasonably be expected to show the same concern for the efficient and reliable operation of the overall network as would a partner in the joint provision of services. The injection of facilities of the SCCs into the network would thus serve as an important barrier to ongoing technological innovation and improvement, denying the general public better service at lower costs.

The situation of the specialized carriers contrasts sharply with that of the independent telephone companies. Over many years the independent companies have designed their facilities to permit participation and connection with the Bell System on the basis of settled engineering and operating criteria and pursuant to established procedures. In addition, services are provided jointly, generally under Bell System tariffs concurred in by the independent companies. The financial and other arrangements with the independent telephone companies are based upon cooperation, and are designed to assure the effective and efficient operation of the switched network. Through settlement arrangements, the independent telephone companies recover their expenses and return on that portion of their investment in plant which is used in the provision of interstate telecommunications services.

By contrast, the specialized carriers have asserted that they will not participate in the sharing of costs and revenues. Obviously, if they are going to be competitors they can not do so. Moreover, they have clearly stated their intention to design their facilities to provide "specialized" services differing

³ See for example, "Opposition to Petitions to Deny Applications" (pp. 21-23), filed by MCI-North Central States, Inc., with the Federal Communications Commission on March 30, 1970, in File Nos. 2868-C1-70 through 2883 C1-P-70.

from those of the existing carriers, an approach that necessarily involves different engineering and operating standards and procedures.⁴ In this and other relevant aspects the specialized carriers seek to occupy a position which is the antithesis of the cooperative and coordinated relationship essential to provide sound and efficient joint service through the switched telephone network.

We are not, of course, faced with just the difficulties caused by the insertion of facilities provided by one specialized common carrier. Six specialized carriers have already filed tariffs to provide private lines services. Such carriers already have completed construction of routes which extend, for example, from New York and Washington to Chicago, from Chicago to Dallas, and from Los Angeles and San Francisco to Tucson. In total, they are capable of serving over 50 cities. In view of this proliferation of SCCs, each now seeking to inject its facilities into the network, the likelihood of having multiple facilities involved in the provision of a single service increases the probability of additional technical and operational problems, the most significant of which are the isolation of troubles and the incompatibility of systems and standards. The steps which will be required by Bell to ameliorate these problems are significant in the terms of additional equipment, manpower and time. Each has a substantial price tag, the payment for which will ultimately fall upon the bulk of the telecommunications users, who in turn will also be faced with the real prospect of degraded service.

While I have described the significant adverse impact on the single nationwide network from the insertion of facilities and equipment provided by the Specialized Common Carriers, I believe that the situation I have described would be equally applicable in the event that the Long Lines Department and Bell System Operating Companies were to be separated from AT&T. Assuming that it were feasible to fragment this jointly owned, integrated network into 24 separately owned and operated parts the result would be a collection of competing entities which would necessarily be motivated solely by their own self interests. Such a situation, with many entities competing for intercity services, would lead to a wasteful duplication of facilities and equipment, different technical and operational standards, a lack of meaningful innovation, and ultimately to increased rates and a lower quality of service to the public.

CONNECTION OF CERTAIN TERMINAL EQUIPMENT WILL IMPAIR THE QUALITY OF SERVICE FOR ALL USERS OF THE NETWORK

As previously mentioned, the network is a single, complex machine with more than a trillion parts—spread over the entire continental U.S. It can complete in a matter of seconds any one of an astronomical number of possible connections. It handles more than 600 million calls per day. At any one point in time thousands of signals are moving accurately through the same switching centers, amplifiers, cable and so forth. To perform properly, each of many millions of parts must work together with precision in complete harmony with one another. Each change in any element of the network must be designed to work compatibly with all that remains of the old and that which is foreseen for future innovation. The risks of harm to the network increase greatly as signals are sent into the network from equipment for which the responsibility for design, manufacture, installation and maintenance and repair rests in those who do not have the overall responsibility for the provision of telecommunications services.

Under the common carrier principle, the telephone companies have end-to-end responsibility for designing, installing, operating and maintaining facilities connected with the switched network. This principle greatly reduces the chances of serious trouble. It leaves no doubt as to the responsibility for correcting any service deficiencies.

Following the *Carterfone* decision of the FCC, manufacturers began to sell many types of terminal equipment to telephone users for connection to the telephone network and the Bell System has permitted the interconnection of such equipment through a telephone company provided protective device. While such a device can prevent certain types of harm to the network, it cannot, in

⁴ See for example, "Opposition to Petitions to Deny Applications" (pp. 21-23) filed by MCI North Central States, Inc., with the Federal Communications Commission on March 30, 1970 in File Nos. 2868-C1-P-70 through 2883-C1-P-70.

many cases, do this completely nor can it eliminate the economic penalty discussed by Mr. Crosland in his statement. Faulty or inadequate terminal equipment working with this intricately balanced and integrated network can cause serious trouble, not only for the two parties involved in the particular telephone call or other message, but for many others. Specifically, improper signals can trigger wrong switches, get wrong numbers, cut off other conversations in mid-stream, cause errors in data transmission, lead to incorrect billing, introduce excessive background noise, and permit unintended parties to hear other people's conversations. Moreover, faulty terminal equipment also can injure telephone company personnel.

None of the foregoing problems are hypothetical. The decline in quality of service due to interconnection of systems and equipment made by others has been demonstrated by experience. For example, on interstate channels, the rate of trouble reports from customers using equipment they provide is in excess of 50 percent above the rate for customers using terminal equipment supplied and maintained by the telephone companies. Studies of basic local exchange service show a 30 percent higher rate of trouble reports on lines using such other equipment than on lines using equipment provided and maintained by telephone companies. This is our experience under present tariffs which provide for interconnection of customer owned terminal equipment through a telephone company provided connecting arrangement designed to safeguard the network from incompatible signals to the extent feasible.

TECHNOLOGICAL INNOVATION IS ENDANGERED BY THE INTRODUCTION OF COMPETITION FOR INTERCITY SERVICES

An important factor in making communications service in the United States today unmatched anywhere in the world is the technological innovation introduced by Bell over the last several decades. The rates for telecommunications services have remained low in comparison with other products and services during this period of increasing inflation because of the offsetting effect of continued technological developments. The key element which has permitted, as well as demanded, innovation has been the existence of the fully integrated interstate network being provided by the Bell System. Having all interstate services provided by means of a single integrated network permitted the introduction and use of high capacity systems, and has resulted in declining unit costs. For example, instead of having two or three separate entities providing separate facilities between the same cities and dividing between them the demand between these same cities, one entity can provide the facilities needed using modern, high capacity, low cost wideband transmission systems.

The ability and desire on the part of the Bell System to lower the cost of microwave radio transmission systems assigned to the common carrier frequency bands, as well as the use of advanced coaxial cable technology, has resulted in increasing by many times the capacity of systems using those media, at ever decreasing cost per circuit mile. This has permitted the rates for interstate telephone calls to remain relatively constant over several decades, even in the face of continuing inflationary pressures. These economical rates have been available to customers served by the Bell Companies and the independent telephone companies alike. Moreover, the revenues from these interstate rates are shared by the participating companies and serve to keep the rates for the basic local services at a much lower level than would otherwise be possible. Yet, the possibility of this continued development and technological innovation and the prospects for continued decline in unit costs will be seriously restricted if significant traffic is diverted to other carriers.

The Bell System is developing even higher capacity transmission systems such as waveguide which will have a design capacity of some 230,000 voice circuits and is expected to be in service in the early 1980's. Moreover, we are confident that in the future we will be able to increase this capacity to over 400,000 voice circuits when the need for such capacity develops. In the switching field we are developing the Number 4 Electronic Toll Switching which uses digital switching and will have about three times the capacity of the present 4A switching system—which is the largest switching system in use in the world today—but with only one-half of the floor space requirement. These two systems will again lead to lower unit costs and will serve to keep the rates of the telecommunications users at a level not otherwise possible in a period of continuing inflation.

Equally important as the development of new high capacity systems, the Bell System has been able, through its research, developmental manufacturing and operational capabilities, to significantly increase the capacity of existing systems with little additional investment. For example, an existing L4 coaxial carrier system can be modified using new L5 technology to increase the voice channel capacity from 34,600 to 97,200 at very low incremental cost. Work is presently underway which will further increase the capacity of that system to 118,800 voice circuits in the late 1970's. The TD microwave radio systems are another example of how Bell has innovatively increased the capacity of a transmission system and at the same time has lowered the unit costs. From an initial capacity of 2400 circuits the system grew to 12,000 circuits by 1970, and new developments will permit a further increase to 16,500 circuits. All of this has been achieved within the same radio spectrum, and with the same towers, buildings and antennas!

The viability of these innovations and increases in capacity is dependent upon our continuing growth, not only for switched message services but also for specialized private line services. While we anticipate continuing growth in demand for both types of services over the next several years, if that growth is siphoned off by the SCC's, the new high capacity, low unit cost systems and equipment to which I have referred will not be economically justifiable. Significant diversions of traffic and demand to the SCCs over the next several years would amount to a wasteful duplication of lower capacity systems and mean a larger total investment to carry the same amount of traffic.

It should also be noted that, in the present environment of contrived competition, when the Bell System develops a new technology, there is no assurance that swift implementation and full benefits to the public will be permitted. For example, the Bell System has, for many years, been planning the provision of digital transmission facilities as the demand developed. Since 1965 we have used digital transmission extensively in our local plant. We have now developed a new technique which will allow us to provide digital transmission over existing microwave radio routes without additional microwave spectrum and without displacing voice circuits. The technique is described as Data Under Voice (DUV) and the equipment, which was developed by Bell Labs, is of an advanced solid-state design and is capable of virtually error-free performance in the digital mode. Some time ago we filed our application to construct and operate such a system so as to provide the new DATAPHONE⁵ Digital Service. However, the SCCs and other Bell competitors have successfully delayed this system even though the FCC found that its construction was in the public interest. Consequently, Bell is being delayed in introducing a new technology which is of special interest to the growing number of customers who have data transmission requirements.

CONCLUSION

The nationwide telecommunications network being provided jointly by the Bell System Companies and numerous independent telephone companies is a highly interactive network dependent upon uniform standards of engineering, operations and administration. The partnership approach to providing this network, with its sharing of revenues in proportion to the expenses and investments incurred by each partner, has resulted in a high quality, reliable network at reasonable rates to the users of the network.

Any possible benefits that the injection of competition into the network might offer to a few large communication users is hardly worth the certain harm to the network and the higher charges to the other users which will result from the injection of facilities and services provided by the specialized common carriers and the interconnection of non-carrier provided terminal equipment. In the long run this forced accommodation to achieve lower rates for a few will result in overall greater costs, because the facilities will cost more and because the Bell System will have to spend more in an attempt to minimize service difficulties in the network.

The Bell System is convinced that introduction of selective and protected competition in intercity services will result in diseconomies, inefficiencies, and poor service through construction of wastefully duplicative facilities, cartelization of the market, and fragmentation of responsibilities for the planning

⁵ Registered mark of American Telephone and Telegraph Company.

and implementation process. Likewise, permitting the unrestricted use of certain terminal equipment will subject the network use of certain terminal equipment will subject the network to significant technical harm. In contrast, the continued progress and economic results realized in the telecommunications industry as it is structured, are a strong recommendation for a continuation of regulated monopoly in this very important public utility area.

If there is some truly specialized communications need which the industry cannot now or in the future provide then those who can provide these needs should be permitted to do so. To date, however, those who are seeking to participate in the provision of intercity telecommunications services have not provided or proposed any services not already provided by the Bell System for which there is a demonstrated need. Accordingly, no valid reason now exists which would warrant the disruption of the single nationwide telecommunications network which would result from the insertion of facilities and equipment of the SCCs therein.

The franchised companies are accountable to the various regulatory bodies for the availability of service and for end-to-end service quality, as well as for the rates charged. This accountability for end-to-end service has been a major factor in producing the fine service that the public enjoys today. The American telephone industry is one of the few American institutions which does take full responsibility for the nationwide service it provides and which responds to service complaints quickly and reliably, with no argument about who or what caused the problem. Injection of other entities into the network dilutes the accountability that the regulatory bodies can reasonably impute to the franchised telephone companies.

Our reliable economic communications network is a precious resource. It exists and is possible now because this country many years ago adopted the common carrier principle charging one entity with the overall responsibility for service to all. If this principle were to be abandoned, responsibility would have to be divided—and we could no longer accept the responsibility we now bear. It would be a very serious mistake to disrupt and impair one of our few vital national systems which is providing the public a superb service at low cost.

EXHIBIT 6.—*Prepared Statement of Mr. Trienens*

PREPARED STATEMENT OF HOWARD J. TRIENENS ON BEHALF OF AMERICAN TELEPHONE & TELEGRAPH CO.

My name is Howard J. Trienens. I practice law in Chicago, Illinois, as a partner of Sidney & Austin. Over the past 25 years, I have represented AT&T and Illinois Bell in rate and other proceedings before the Federal Communications Commission, the Illinois Commerce Commission, and in the courts. Over the same period, I have represented other clients, including railroads and groups of railroads in rate and other proceedings before the Interstate Commerce Commission. Some observations on the telecommunications and railroad industries and the agencies regulating them may be of assistance to this subcommittee in considering issues raised at these hearings.

The members of this subcommittee are well aware that the railroad industry is in deep trouble. After lengthy hearings last year, Congress enacted the Regional Rail Reorganization Act of 1973 in which is found that "essential service is threatened with cessation or significant curtailment," and that the needs of the public "cannot be met without substantial action by the Federal Government."¹ That Act provides a governmental process for planning a new Consolidated Rail Corporation as a financially self-sustaining rail system to be created out of the railroads in the Northeast, particularly Penn Central, that cannot be reorganized under normal procedures. Congress has authorized \$2 billion of federal money for acquisition, rehabilitation and labor protection. There is serious question whether even this huge sum will be enough federal money to achieve the Congressional purpose, and a three-judge court recently held, in a decision now on appeal, that the Act is unconstitutional for failure to provide enough money for railroad creditors.

¹ Public Law 73-236, Section 101(a).

While the problems are most acute for railroads serving the Northeast, these problems affect the entire industry. There are about 20 major railroads, each operating in its own area of the country. Much of the energies of railroad managements is devoted to fighting among themselves over divisions of joint freight rates, compensation for the use of each other's freight cars and other internal disputes. And, because joint service is provided by interchange of cars among separate railroads, car shortages and other service deficiencies on one or more railroads adversely affect the entire service.

Unlike the fragmented railroad industry, the Bell System is an integrated nationwide network having common standards of service. And, unlike the railroads who have no research organization worthy of mention in the same context as Bell Laboratories, the Bell System has research, development and manufacturing integrated into the system planning that has brought our Nation the world's finest telephone service, and has done so at relatively low rates despite inflationary pressures. The interstate freight rate level of the railroads had increased about 50% between 1967 and early 1974, and another 10% increase became effective June 20, 1974, whereas, by contrast, increases and reductions in the Bell System's interstate rates have been substantially offsetting since 1967. And whereas Penn Central and other bankrupt railroads are receiving federal aid and are paying no taxes, the Bell System pays some \$4½ billion annually in federal, state and local taxes.

With these contrasting experiences, it is not surprising that observers of the railroad scene have suggested that the railroads should be restructured in the model of the nationwide Bell System. The President of Penn Central, Mr. Jervis Langdon, has advocated that order be brought out of the "present confusion" of the railroads by creating a "central control, along the lines of the American Telephone and Telegraph Company." And similar opinions have been heard from such disparate sources as industrialist Norton Simon,³ and Attorney General (then Senator) Sazbe who proposed legislation that would integrate all the railroads in the country into a single system controlled by a holding company, citing AT&T as his model.⁴

What is surprising is to find witnesses before that Subcommittee, notably Professor Melody, proposing that the Bell System be broken up, with the "24 Bell System operating companies . . . separated individually from the system," with "Bell's Long Lines Division . . . made into a separate transmission company," and with the "manufacturing affiliates . . . spun off" and "Bell Laboratories . . . spun off" (August 1, 1973, Committee Print, pp. 1240-41). Such a proposal would restructure the Bell System in the present model of the railroads, at the very time when the relative performances of the two industries in serving the public calls for serious consideration of just the opposite—an integration of the railroads in the model of the Bell System.

There are, of course, differences other than structure between the railroad and telecommunications industries. For example, criticisms of some railroad managements for diversification into unregulated, sometimes speculative enterprises have no application to the Bell System which confines its activities to provision of regulated telecommunications services.

But there is one similarity in the development of the railroad and telecommunications industries that deserves special attention because of current efforts, discussed before this Subcommittee, to introduce so-called competition into telecommunications. That similarity is the "value of service" rate structure and the effect of mixing competition and regulation in the context of such a rate structure.

A value of service rate structure is designed with a view to the broad public interest, as contrasted with rates geared closely to costs. In the early years of the railroads, often at the behest of regulatory agencies, relatively low freight rates (sometimes called "missionary rates") were made for products of agriculture, forest products and other raw materials, while relatively high rates were maintained for manufactured goods. Congress encouraged this approach with the Hoch-Smith Resolution of 1925, declaring that "the lowest possible lawful rates" be established for "products of agriculture."⁵ For in-

² Langdon, *Toward a National Railroad System*, N.Y. Times, April 1, 1973, Section 3, p. 14.

³ Transcript of Mr. Simon's New York meeting, November 8, 1973, pp. 3, 16, 24.

⁴ S. 2526; see Congressional Record of October 3, 1973, p. S. 18456.

⁵ 43 Stat. 801 (1925).

dividual commodities, railroad rates were designed to balance producing areas, cities, and ports into symmetrical rate structures considered desirable but having little relationship to the cost of handling the commodity.⁶ For example, in a 1929 case concerning port relationships, the ICC emphasized that costs of service had never been regarded as determining the measure of railroad rates, but that the rates should be made in "the best interests of the carriers, the ports and particularly the shippers."⁷ The Supreme Court sanctioned the regulatory policy that costs of service were not "the controlling factor in rate making."⁸

However, with the railroad rate structure firmly established on a value of service basis, modern highways were constructed and trucks were able to haul freight traffic in volume. The truckers did not solicit all commodities to all points. They solicited the manufactured products and other commodities as to which the railroad rates were relatively high. The truckers were able to charge rates lower than the railroad rates (but not necessarily lower than the railroad costs), and to attract much of the profitable traffic without serving the less profitable areas. The truckers thus engaged in the process known as "cream-skimming."

When the railroads attempted to compete, through buying their own trucks or by reducing their rates to meet the competition, their efforts were often frustrated by the ICC. The ICC severely restricted the railroads' use of motor carrier technology to very short hauls, with the express purpose of limiting "full railroad competition with over-the-road motor carriers."⁹ And the ICC cancelled railroad rate reductions designed to meet competition in order to protect competitors from loss of traffic, often using fully allocated cost concepts condemned by economists as unsound.¹⁰ The role of the ICC has been aptly described as a "giant handicapper."¹¹

As a result of artificial restrictions on the use of the same technology available to competitors and on the making of competitive rate adjustments, there was neither regulation of a monopoly nor genuine competition in surface transportation. Instead, we have had a mixture reflecting the worst of both worlds. The Council of Economic Advisers, under two Presidents, has found that the ICC's action in protecting competitors had been detrimental to the interests of the consuming public.¹² A former member of the Council has estimated that detriment as amounting to billions of dollars each year.¹³ As the Federal Railroad Administrator, John W. Ingram, stated earlier this year: "Artificially sustaining competition hurts the whole Nation in the pocketbook. It's unfair to a far greater number of people. It's a misallocation of transportation resources."¹⁴

The telecommunications industry today is confronting problems that arose in the railroad industry over a generation ago. Recent FCC decisions have permitted the entry of competitors. These new entrants make no pretense of seeking to serve all customers over all routes. Instead, they concentrate on the "cream" portions of a value-of-service averaged rate structure.

Telephone rates have developed over the years with the primary purpose of promoting universal service. Under this concept, generally business users of telephone service pay higher rates than residential users and the users of optional or vertical services (such as extensions) contribute more in relation to costs than basic residential service. Long distance rates are set on statewide average and, for interstate, a nationwide average basis. In 1941, the FCC

⁶ See, for example, *Rate Structure Investigation, Part VII—Grain and Grain Products*, 164 I.C.C. 619, 631, 697-698 (1930).

⁷ *Baltimore Chamber of Commerce v. Ann Arbor R.R.*, 159 I.C.C. 691, 696 (1929).

⁸ *Alabama Great Southern R. Co. v. United States*, 340 U.S. 216, 223, n. 4 (1951).

⁹ See *United States v. Rock Island Co.*, 340 U.S. 414, 429-430, 437 (1951).

¹⁰ See *American Lines v. L. & N. R. Co.*, 392 U.S. 571 (1968). The Department of Justice confessed error in this case, but the Supreme Court sustained the action of the ICC cancelling reduced rail rates, not because it found that the ICC decision represented sound economics, but because the particular statutory standard allowed the ICC discretion to cancel the railroad rates pending an ICC determination of what cost theory should be adopted.

¹¹ *I.C.C. v. N.Y., New Haven & Hartford R.R.*, 372 U.S. 744, 758 (1963).

¹² 1966 Annual Report of the Council of Economic Advisors, pp. 126-127; 1971 Annual Report of the Council of Economic Advisors, pp. 123-125.

¹³ Peck, "Competitive Policy for Transportation?", in "The Crisis of the Regulatory Commissions" (MacAvoy ed., 1970), pp. 72, 74.

¹⁴ Speech in Kansas City, Missouri, January 11, 1974.

held that there should be "equal charges for equal services," notwithstanding differences in costs in different areas of the country, emphasizing that "Telephone service and the rates charged therefor have an important and direct impact on the daily economic and social lives of the many millions of individual telephone users."¹⁵

The telephone rate structure has thus been designed to enable telephone users to subscribe to basic telephone service at relatively low rates on the theory that telephone service is more valuable to all users when the maximum number of people can be reached by telephone. This concept of universal service has been achieved through a rate structure which was never intended to reflect the relative costs of basic residential service as compared with elaborate services to business, or the costs of light density long distance service as compared with service over high density routes.

New entrants to the telecommunications business do not attempt to serve the light density routes or the basic residential user. Intercity competitors concentrate on the high density, low cost routes. And, in the terminal equipment area, unregulated suppliers selectively attract business users with relatively long location life, leaving the telephone company the less stable, higher cost business customers and the residential users. The very fact of the entry of competitors forces changes in the value of service rate structure in the direction of a more cost-oriented rate structure.

Moreover, the intercity private line market, or the business terminal equipment market, cannot be assumed to be separable markets which will have no effect on message long distance rates or residential basic service rates. There is considerable cross-elasticity between intercity private line services and long distance message service, and the level of local exchange rates for basic residential service depends upon contributions from business stations and other terminal equipment. Thus, the injection of competition operates to destroy the preexisting value of service rate structure.

If there were to be true competition in furnishing telecommunication services, the Bell System would probably regain most of its present business, but under a very different, more cost-oriented rate structure that would entail substantial increases in rates for residential, small business and rural users. Such a result would be in a direction just opposite that sought by state regulatory commissions in their efforts to allocate as much as possible of necessary statewide rate increases to services other than basic residential telephone service. But Congress and the Nation cannot have it both ways. There cannot be introduction of competition into a previously regulated monopoly area without price readjustments that may help some users but will adversely affect the users of basic service.

The FCC, having injected competitors into the telecommunications industry, has not permitted genuine competition. The FCC, in one decision reminiscent of the ICC restrictions on the railroads' use of motor carrier technology, has restricted the Bell System from using satellite technology in providing competitive private line service.¹⁶ And the FCC has delayed the Bell System's competitive rate adjustment, and has failed thus far to repudiate fully allocated cost theories.

As Mr. Whitehead stated to this Committee at the July 9 hearing, the FCC's decisions are "turning the Government into a cartel manager, apportioning markets among the 'competitors'" (Tr. 1609). The history of the railroad industry, in which the ICC tried to play the same role of "cartel manager", or "giant handicapper", amply demonstrates the fallacy of pursuing such a course in the telecommunications industry.

It has been said that those who do not study history are condemned to repeat it. If we are to learn anything from our regulatory history, we should know by now that permitting the entry of selective competitors and, at the same time, regulating to protect those competitors, is the worst of all worlds for the consuming public.

¹⁵ *Department of Public Service of Washington v. Pacific Tel. & Tel. Co.*, 8 F. C. C. 342, 363-364 (1941).

¹⁶ *In the Matter of Establishment of Domestic Communications in Satellite Facilities by Non-Governmental Entities*, 38 F.C.C. 2d 665, 676-679 (1972).

EXHIBIT 7.—*Prepared Statement of Mr. Baker*PREPARED STATEMENT OF WILLIAM O. BAKER ON BEHALF OF AMERICAN
TELEPHONE & TELEGRAPH COMPANY

QUALIFICATIONS

My name is William O. Baker and I live in Morristown, New Jersey. I am president of Bell Telephone Laboratories.

I received a Ph.D. degree from Princeton University in 1938 and joined the Research Department of Bell Laboratories in 1939. I was placed in charge of polymer research and development in 1948. Subsequently, I was appointed Assistant Director of Chemical and Metallurgical Research and later made Director, Research, Physical Sciences. In 1955 I was appointed Vice President, Research—a post I occupied until 1973 when I assumed my current responsibilities.

Perhaps the following examples of activities reflect my continuing endeavor to generate new science and to enhance its application for the well-being of our nation and our firm. I serve on the Energy Research and Development Advisory Council; Project Independence Advisory Committee, Federal Energy Office; National Commission on Libraries and Information Science; National Council on Educational Research, National Institute of Education; Board of Higher Education of New Jersey; Advisory Board on Military Personnel Supplies, NRC; Scientific Advisory Board, NSA; Evaluation Panels, Advisory to the National Bureau of Standards, NAS-NRC; National Cancer Advisory Board; Scientific Advisory Board of the Robert A. Welch Foundation; Management Advisory Council, Oak Ridge National Laboratory; and Commission on Critical Choices for Americans. I have served on a number of other advisory panels for the Federal Government, including the Panel on Physical Chemistry for the Office of Naval Research, Consultant Panel of Operations Evaluation Group of the U.S. Navy, the Liaison Committee for Science and Technology of the Library of Congress, the Board of Regents of the National Library of Medicine, Air Force Systems Command Board of Visitors, Consultant to Department of Defense, and several panels for the National Academy of Sciences/National Research Council and for the U.S. Chamber of Commerce. I am a past charter member of the President's Science Advisory Committee and of the National Science Board of the National Science Foundation.

My own research has studied the nature of solid matter, and especially that composed of very large molecules called polymers, of which all living tissue as well as synthetic plastics and rubbers are composed. Indeed, during World War II, this work was basic to the solution of the materials crisis represented by the National Synthetic Rubber Program. (My superiors and I had responsibility for the technical portion of that project—the largest Federal R&D effort up to that time.) So while I don't quite go back to Dr. Alexander Graham Bell's time, the Age of 20th Century Science and Engineering has been pretty well covered.

I am a recipient of the Perkin Medal, the Priestley Medal, the Honor Scroll of the American Institute of Chemists, the Award to Executives from the American Society of Testing and Materials, the Edgar Marburg Award, the Industrial Research Institute Medal, and last year the Proctor Prize, the Frederik Philips Award, and the *Industrial Research* Man of the Year Award. I have received honorary degrees from Washington College, Stevens Institute of Technology, Georgetown University, University of Pittsburgh, Seton Hall University, University of Glasgow, the University of Akron, The University of Michigan, Saint Peter's College, Monmouth College, Polytechnic Institute of Brooklyn, University of Pennsylvania, and Clarkson College of Technology.

I am a member of the Board of Directors for Annual Reviews, Inc.; Council on Library Resources; Clinical Scholars Program of The Robert Wood Johnson Foundation; The Third Century Corporation, and a Trustee of The Aerospace Corporation; Carnegie-Mellon University; Princeton University; Rockefeller University; The Andrew W. Mellon Foundation; Urban Studies, Inc., The Fund of New Jersey.

I am a Fellow of the American Physical Society, the American Institute of Chemists, and of the American Academy of Arts and Sciences. I am a member

of, and have served on the council of, the National Academy of Sciences and the National Institute of Medicine, and as a member of the American Chemical Society have arranged preparation of environmental and related reports on public policy.

STATEMENT

I appear before this Committee as a representative of the Bell System, but my remarks will be based on my lifetime involvement in science and technology, not only as carried out at Bell Laboratories, but also in various academic and Governmental institutions.

It is in this regard that, as I review the transcript of these proceedings, I wish that it contained more concerted discussion of science and technology. The omission is unworthy of the broad purposes of the Committee's activity. Hence I welcome indeed an occasion to describe briefly how science, technology, and innovation arising from them, are related to industrial structure, the Bell System mission, and competition.

First we should, in the time-honored way of science, comment quickly on definitions. Competition as a mode of expression of human energy and purpose to excel, to be there first, to do the best, is a primary ingredient of all research and development, and most particularly in the ways these are practiced in industrial laboratories, especially in the laboratories of the Bell System. Indeed, as you well know, the semantic origins of the word competition are synonymous with those of competence. The pride that we take in American science and engineering, such as that of the Bell System, which has been approved by our critics in your Hearings, is based on competence. This indeed arises directly from the ceaseless and productive competition, in all phases and all levels, of our people with the rest of the world's community, and even with each other.

Molecules do not know whether they are present in alleged monopoly or assumed free-market programs, but they are the stuff of the most intense and refined intellectual rivalry, which in fact is a day-to-day quality of life in the Bell System and its industrial contemporaries around the world. In fact, this rivalry in research and development is the more fierce the larger the institution. It is interesting to note that whatever truth there may be to claims that two to three auto companies control that business, and the big computer makers dominate that field, and the big chemical companies hold captive their lines, and that big telephone overshadows its 1800 fellow companies in the U.S., the laboratories of these enterprises compete with each other extensively for progress which is indeed common to all. The laws of nature are just that way—a new energy source is good for General Motors or Ford but involving atoms and molecules and waves as it will, is something that General Electric and IBM and AT&T, and for that matter, duPont and Warner-Lambert, are deeply affected by. But hundreds of small, market-oriented laboratories simply seek technical (and trade) differentiations of their products. No transferable innovation results. Thus, at the very roots of the matter, we find that the oft-discussed rubric of "industry structure" has little meaning for the forward thrust of human affairs as embodied in natural science and engineering.

But the problem of meaning and understanding goes beyond this. For competition to mean anything really relevant to the concerns of this Subcommittee, apparently it has to be embroiled by a host of economic traditions and theories. That is, it has to do with market structure and entry, but this aspect has not been shown to be generally necessary to the actual liberation of energy and application of human talent in the broader meanings of *compete* and *competence*. Parenthetically, we might note that this already raises a caution from the scientific aspect, since while theory in physical science has an unquestionable record reaching from Newton and gravity to the nuclear age, it is awkward to find a validation of economic theory with respect particularly to innovation. If there is one, I am sure somebody would like to bring it to the attention of these hearings.

Now this is not a trivial, even though possibly unsettling, remark. Unless this can be proved to be wrong, are we not taking rather sinister risks for the future of our free society in assuming some consistent, even sacred, generality of qualities in a market structure defined by *a priori* formulae? I believe we can demonstrate that it is indeed unsound to assume such gener-

ality. In fact, the proposed irreversible application of these unsubstantiated generalizations to the telecommunications industry seems to be both wrong and dangerous. We shall try to explain this matter in technically simplified ways, but we might first just note a couple of the underlying features. One is that a product, a single thing, a component, such as is the currency of conventional market activity (the appropriate example, long ago adopted by the profession of economics, is the mousetrap) has little or no meaning for an operating system. Accordingly its developers, and makers and sellers, really have no way of taking responsibility for its performance short of owning or operating the using system itself. Further, in the situation with, say, transistor radios, where the physiological system is identical with the purchaser who can make his own decisions and evaluations immediately, or with mousetraps, where although there might be considerable benefit from a wider systems analysis, the critical function can be pretty well contained in the *marketed product itself*—its compatibility demands are modest.

In contrast, systems technology and innovation of the kind we are treating demand, at every stage, that every component, every part, from the wire on the telephone pole to the elegant digital processors of the No. 4 ESS, (which surpass in reliability and magnitude the very best electronic computers and modern engines) must balance in properties (including life span and cost) with all the other systems ingredients. These, in the case of the Bell System, number some 10^{12} (millions of millions) discrete elements. An entrepreneur, a product marketer, would not have the same incentive to burden his product design, development, and manufacture with responsibilities for endurance and precise optimization of such a plant, (much of it is already decades old, and must last for many more decades into the future). For he has no responsibility for the operation of that plant, for the provision of its services on a universal and timely basis to any and all of the American people. The livelier he is in making, shall we say, integrated circuit boards for everybody's enjoyment in record players, hand pocket calculators, movie camera controls, and machine tool programmers, the less interested he will be in the extra and often agonizing effort of assuring performance and reliability that our systems demand. Thus, we find with our No. 1 ESS machine that maintenance over the years is 50% less than for comparable switching investment with earlier designs, and that the No. 4 ESS machine can be arranged to take up 1/6 of the space of the prior equivalent toll switching facilities. These systems design features impact on the integrated circuit packs with requirements yielding savings for telephone subscribers, which is not the prime motive of the components manufacturer.

This unique continuity of technical action, from the basic discoveries and invention through to direct operations in the network, is possible only through joint effort with the Western Electric Company. The Western Electric's role in the conversion of science and engineering into continuously evolving telecommunications capability is unparalleled in industry or government. Without subjecting the exploratory programs or the final development and design at Bell Laboratories to self-interested control, or even to pressures for manufacturing convenience, the Western Electric responds to the modes and needs for innovation with alacrity and high technical competency and understanding.

Such a way of accomplishing the difficult phases of converting new ideas and devices into something actually useable and makable is not found in conventional market- (as opposed to systems-) ruled enterprises. Not only does the Western Electric provide a daily liaison and cooperation at the various branches of Bell Laboratories situated at major Western Electric plants (but allowed to operate wholly autonomously therewith), but further, its own laboratories, the Engineering Research Center, vigorously prepare for new and versatile manufacturing processes which are intimately coordinated with the design and development of new products and systems at Bell Laboratories. Thus, in thin film technology a variety of basic processes were being explored at the ERC simultaneously with the experimental work on the circuitry and devices at Bell Laboratories. As synthetic plastics became major structural elements in the Bell System in new Bell Laboratories designs, the ERC conducted pioneering studies of improvements in extrusion and of new processing machinery.

Many other elements of the Western Electric's role have been described in other records for this Subcommittee, such as by Mr. Stephen Fletcher. However, in the context of this report, about engineering and science, the institutional and personal affiliation with the Western Electric is intrinsic to the whole innovation process we pursue. For instance, in the matter of quality assurance (the result of Quality Control, a statistical technique discovered at Bell Laboratories, which is regarded by the industrial world as the essential step in serial production of product), the Bell Laboratories has independent responsibility for maintaining the highest performance of all Western Electric output on behalf of the operating companies. This, of course, is a primary object of systems innovation through the design and development method. But invariably, and often at large initial cost and difficulty, the Western Electric responds to our extensive and incisive requirements for tests and quality checks, both at the early stages and throughout manufacturing schedules. Bell Laboratories has the responsibility, and exercises it whenever needed, of closing down production lines if they produce unsatisfactory quality. Yet, by remarkable merging of interests, and the literal as well as presumed integration of purpose, the cooperation of the Western Electric from production man to top management in accepting and improving with incessant economy the host of new systems features, as we shall sample them below, is simply indispensable to the function of research and development in telecommunications. And this is, indeed, the proper scope to cite, since the manufacturing methods and processes of the Western Electric are recognized throughout the independent telephone industry as well as in Government as the preferred and pacesetting paths by which new things are made into real devices and systems.

Bell Laboratories depends on every element of an ingenious Western Electric organization, including such things as the Western Electric Training Center for ESS operation at Columbus, Ohio, where more than 1200 experts were produced in 1973 alone. We depend upon the Product Engineering Control Centers (PECC), where the complex innovation of new telecommunications facilities is managed, from the intricate engineering through to the ultimate economics and logistics. It depends on this structure for the translation of its novelty into use just as fully as our creativity depends on our own human resources and laboratory facilities. As we shall see in the following, our greatest stimulus to creativity is the close bond to the operating telephone network, which permits us to gauge what is real and what is illusory in new technology. Equally, the stimulus to ingenious design and optimal economy of new products comes from this same intimate co-working with the Western Electric production. This is being shown presently and strikingly in the Denver laboratory for the design of PBXs and related customer facilities located at the Western Electric factory, which quickly translates this development into a useful hardware. This is how we can constantly advance telephone user services.

But, it is claimed these features of network compatibility and reliability do not extend to things like terminal equipment which are, instead, wrongly claimed to operate independently of the system. Examples of such equipment are presumably at the ticket counter for airlines or maybe units for, seat assignment and fare collection for the Amtrak Metroliner, or the telephone set itself, or a data-phone accessory, or a total distributing system called a PBX, etc. I assert to the contrary that there is a direct and mutual influence between innovation in telephones and other terminal equipment and the intimate coordination of the new qualities of such apparatus with known and controllable signaling, transmission and switching parameters of the system to which it must be attached. This appears especially in a vast, sensitive structure like the Long Lines operation, but acts also in local networks. Further, the responsibilities of such attachments have a profound influence on the generation of new science and engineering by the professional experts, when they know that they are part of the same enterprise that will use their creations.

Thus, the history of key telephone systems and auxiliary products, submitted by Mr. Frank A. McDermott, Jr. to the Hearings of this Subcommittee, continues uninterrupted since the 1A system of 1938. This flow of system innovation through terminal equipment research, development, design, and manufacture shows interesting characteristics of the themes we have noted

above. Above all, it illustrates the pressure constantly exerted by consistent systems optimization in engineering and operations, for innovation and improvement. Thus, the intimate liaison of the engineering and operations departments of the AT&T Company and of its Long Lines with Bell Laboratories provides a guiding thrust for our creation of new components and systems. We report categorically that this pressure far exceeds any alleged market stimulus even for products such as terminal equipment. Thus, for these reasons, alleged competition for furnishing seemingly isolated parts of an operating system results in neither satisfactory quality and reliability of such components nor in actual force for innovation and improvement.

So, let us get into the record of key telephone technology. As Mr. McDermott's report shows, a constant advance was in the speeding of response to customer usage habits. It was also in the simplification and economy in installation and operation of the units. All during this time (marked in the first decade by a 5 db transmission gain for the basic telephone, followed by the introduction of wire-spring relays and printed circuitry, and in the next decade by voice-switched, hands-free transistorized speakerphone, and soon after that, in the early 1960s, by repertory dialers and the use of plug-in, easily maintained and rugged circuitry), one set of requirements presented constant challenge. They were the need for full electric powerlines to come to the various key telephone sets. This was because the most practical operation by the user required signal lights, even though small ones. These, based on incandescent bulbs, took extra, expensive and often cumbersome powerlines (and one would say, nowadays, also an energy increment). Now this signal lamp, or optical signaling, market is exceedingly broad, for as you know, winking lights characterize almost every instrument panel, control unit and other display system. Nevertheless, despite the prosaic presumed market, these electric lamps, always in the case of telecommunications and often in the case of other instrument usage, had to be parts of the system that required extraordinary reliability and uniformity. Replacing these lamps comes to be an intolerable cost for key telephone operation, since one would be using hours of expensive labor for cents worth of materials' cost and function. The results were, as we have postulated they would be, that over these decades no advances of any importance were made in this field by the general trade. This was especially true in that vigorous portion of industry which makes electrical components.

The telephone companies, however, demonstrated emphatically that some better display and signaling system was necessary. This was recognized in Bell Laboratories long ago, at the beginning of the new era of solid state electronics, which was generated there in the late '40's. It was made part of our development agenda. Further, in research programs at Bell Laboratories we had long ago recognized that the production of electromagnetic radiation in any new form is significant for better options and services for telecommunications. Thus, in specific case and apparatus authorizations, through which we administer the forward-planned studies in Bell Laboratories, including one of November 1, 1955, and of January 1, 1956, and of January 1, 1957, a basic effort was expanded. It was, to see whether a class of crystals, known as the III-V compounds that had been identified by Welker in Germany, and that were transparent to visible light, could in fact be made, through the general principles of holes and electrons that we discovered as forerunners of the transistor, into new light sources and signalers. Already, Chynoweth and McKay had reported, from our fundamental studies of junction physics, the very heart of the whole field of solid state electronics which now provides more than \$30 billions of the gross national product, that light could be produced from reverse biased structures. The rest of the chronicle is an elegant but entirely typical record of scientific and technical creativity, for systems advance. You have guessed the present phase, which is that all key telephones will now have signal lights of various colors, thereby notably extending their functions. They are pioneered and commercially produced by the Western Electric Company and others. They are so efficient in their power demands that they are simply powered over the ordinary telephone lines, require virtually no maintenance, and they are at a cost fully competitive (and that is the place where competition animates us every hour of every day throughout the Bell System) with any other available unit.

The incandescent bulb of Edison, the fluorescent light invented by Boutry and his associates, and these light emitting diodes are three great steps in the illumination for mankind since the candle and the oil lamp. What may not be so obvious is that a vital new chapter in science and engineering has come from this work—this thesis that systems innovation in a vertically integrated industry driven toward improvement of components and equipment in ways that are not found in anyelement of general market activity endeavor. For now pocket calculators, hand computers (and hosts of the larger ones) and increasingly a wide range of other machinery depend on light emitting diodes (LEDs as they are known now) for their output. The LEDs enable new circuit elements such as the optical isolator. They are also essential in the systems of optical communication and data processing now being developed. This happened in America because we have allowed industries of this scope and character to pursue the most fundamental concepts of physical science, the very action of electrons and waves, of quantum entities envisioned by Einstein. This work has been translated by Bell into practical technology, and through out patent and licensing and publication policies, has been made also available to any other industry that will find additional uses for public and economic benefit.

The upsurge that we have summarized in these few lines had, of course, a long path. It involved the careers and commitments of many talented people. They apparently felt that the opportunities in an integrated technological industry were worthy of their life aspirations. Some such feelings surely influenced, for example, Frosch and Thurmond, when they produced a method for the chemical synthesis of hyperpure gallium phosphide, the crystal which does it all. I say this not only because of my close association with them as colleagues during their careers with us, but also because the first experimental and then the first full-scale production apparatus for this synthesis, made at Western Electric, involves the high pressure containment of phosphorous. This is done under conditions of such hazard and difficulty as makes the whole technique of, for instance, phosphorus firebombs, which occupied the attention of hundreds in both world wars, seem simple in comparison. But, you may ask, why did the telephone system, specifically Western Electric and the Bell Laboratories, master this dangerous but now completely tamed methodology for which a vast chemical industry might have been better equipped? Well of course we did, as always, seek the help of our sister industries in these innovations. But at the time, with requirements for completely new properties, it was soon established that there was no way to do it but our own.

The same, of course, was true for Pfann's invention of zone refining, which created the first usable matter for transistors. It is the worldwide basis for production of all silicon, germanium, and related substances on which solid state electronics depends. The fifth anniversary a week or so ago of Armstrong's landing on the moon reminds one of Sir John Cockcroft's observation a few years ago, that without these solid state devices no space exploration, satellite orbiting or missile production would have been possible.

This year is the twentieth anniversary of the Bell solar cell, a junction device showing the inverse of the qualities that we have described for the light emitting diode for key telephone systems. This device, discovered in our laboratories by Pearson, Fuller and Chapin, has been the energy source for all space vehicles in history, including exceedingly careful copies of our structure made by the Soviets in their very earliest Sputniks. In the solar cell, photons of light hitting the junction generate an electric current, the symmetrical function to what we have described in the production of light by the reversed biased junction effect. Again, industries have been founded on this cell, and in the future vastly increased activity will be attempted in augmenting our desperately needed national energy requirements. You may have noticed that recently the Mobil Oil Company and the Tyco Laboratories in Boston have entered into a joint program for the development of thin silicon films (which will be related to our Bell System work on thin film integrated circuitry) for large-scale electric power generation. This will, of course, be based on exactly the configuration and effect of the solar cell, whose experimental application for remote telephone powering was tried out more than a decade and a half ago. Once more, the unity of System operation,

Western Electric production and Bell Laboratories development caused this change to happen.

So perhaps you will be intrigued that these are some of the ways in which the response to a system's need, in the primary case of the key telephone, has stimulated innovation in markets that are competitive in the sense of S. 1167, like any garment making or soda pop, it is hard to find quite similar evidence. By the way, however, there is some innovation in garment making, but it hasn't happened at all through competition in that industry. The most important part of it, of course, is the use of synthetic fibers, which has revolutionized the comfort, economy and, not so incidentally, ecology of the developed world. But the point is, these fibers came from the relatively integrated chemical industries which were interested in raw materials which could be converted directly by them into a systems function, such as that of a fiber and fabric. Some of us, in behalf of the American Chemical Society, have recently documented this extraordinary saga in the report entitled "Chemistry and the U.S. Economy." There are some pretty deep lessons in it for critics of industry concentration and integration and for the relationship between innovation and market allocation and dispersion. But all this is not the reason I refer to it here. The reason is that another recent and dramatic innovation in garment is that, led by the French industry, increasingly the economic and wastefree cutting of valuable fabric to fit the human shape is done by a laser beam. This is laser energy, or coherent light, discovered by Schawlow and Townes in the Bell Laboratories in 1958. At last another age-old human labor is being relieved. The snip-snip-snip of the shears replaced, to be sure, in many centers by the use of expensive machine cutters will soon be abolished by the use of the fourth great advance in light generation in modern history.

Once more you will know that new industries have already been derived from this finding. We shall point out later that it can lead, if we are given the chance to apply it, to as dramatic an advance in telecommunications as Bell work on radio and coaxial cables and waveguides has already achieved for our nation and the world. But right now my point is different. It merely is that our pressing, relentless, internal competition for systems improvement, for new ways of modulating the energy of signals to handle human information, led us to the laser. It led us to the phenomena of energetic population inversion that Townes perceived first in principle, stemming from his original work in microwave spectroscopy at the Bell Laboratories just following World War II. It is fascinating, although chilling, to speculate on what might have happened if one had depended on dispersed, fragmented free-market stimulus to introduce lasers into the free world. For one thing, we are quite sure from the work of Basov and Prokharov that we should have been hearing of lasers first from Russia. We should have been hearing of them as sources of the most intense non-nuclear energy ever achieved by man, with brilliance rivaling the sun. As you will know from current work, they offer a high probability of so intense an energy that it will induce fusion of nuclear particles, yielding controlled thermonuclear reactions. In the last few months, claims of substantial fusion events and the accompanying neutron production due to high energy laser illumination have been reported in the United States. What sort of detente should we have in a trade agreement to barter some of our phosphate ore, for instance, for a hint of how to make a Soviet carbon dioxide laser. (This was actually discovered in our Murray Hill Laboratories by Kumar Patel.) These and derived systems now provide an energy source which is not only the essence of "smart bombs" for national security, but for a host of technologies. These range from a measure of continental drift to the world's most efficient ways of laying out, by civil engineering, water and waste duct systems, which must be in line and geometrically positioned.

These examples we have discussed so far, of the stimulus of systems operation, vertical integration and genuine intellectual competition to innovation, could have been supplied in exhausting detail for all the elements of the nation's telephone system, as well as to the coordinate impacts that we have cited. What I am saying is that the extensive evidence you have heard, especially beginning with that of my associate Dr. Jack Beard last year, speaking as the Chief Engineer of the American Telephone and Telegraph Company, gives excellent technical descriptions of how an integrated system

actually functions. Progress in that function is based on the same methods of advance that we have sampled.

Obviously we shall have time to touch on very few more of this large universe of functions. One that is very central to our business, however, involves switching. This, of course, is the way that messages get from a particular sender to a particular receiver over 350 million miles of circuitry between exchanges, and through the many more miles within the hundreds and hundreds of local office territories themselves. Switching is how any one of about 13 million telephones can be connected quickly and reliably with any other. This involves even more than being able to make, within seconds, 7 million billion possible connections, and this process is engaged in more than 600 million times daily in the single integrated network. These numbers represent a complexity of operation unsurpassed in any other human endeavor. They serve again to emphasize the theme that it is the demands for improvement and enhancement of such facilities which stimulate the universe of innovation that we have hastily sampled. In this case, it is the theory and practice of logic machines which have nowadays evolved into digital computers and their accessories. These are also the basis of another major industry, and are large elements in our national economy as well as security. In this instance, although not all of the root structure of the technology came from the telephone network's incessant demands for technical progress, none of it at all began with market competition. Rather it is an historic example of the intellectual stimulus and competition, coupled to telephone systems behavior and need, that we have cited at first. For Babbage thought of a digital machine, and the Jacquard loom and other events inspired Aiken and his co-workers at Harvard and von Neumann at the Princeton Institute for Advanced Study to undertake research on digital computers in the 1940s. This work probably would also have led to the industry in which the United States now leads the world. However, von Neumann has told me that he believed these machines would have been of little eventual practicality without the solid state diodes and transistors which did come from our telephone research laboratories.

But beyond this, the first electrical digital computer, itself, in fact came directly from the automatic switching developed in Bell Laboratories. This happened in 1939, when George Stibitz and S. B. Williams completed Stibitz' design, begun in 1937, of a relay and crossbar switching computing machine. In turn, these relays are, of course, themselves, the essence of telephone switching. The theory, as well as practice, of their operation was recognized by Nyquist, Hartley and others in the Bell System. It was then articulated by Shannon in his classic Information Theory, generated at Bell Laboratories in 1948. The concept applies his findings of 1937, that Boolean algebra describes the way to switching circuit design of the tumost beauty and generality.

Furthermore, not only is this Information Theory at the heart of all modern computers, also it has laid the base of digital processes of all kinds. It teaches that digital encoding is capable of representing all knowledge of mankind, all sensing, and, in the most rugged form, its communication and processing. If this age is to be remembered for its mental advance, it will be primarily through its recognition of the supplements to thought and knowledge of the mind provided by digital machines which came directly from telephone switching and the associated communication theory.

Once more, the whole system evolved coherently through telephony, with Shannon even showing how systems reliability could be achieved in the gross complexity of computers and digital processors, even with a certain proportion of specifically imperfect relays and other logic and memory units. The Hamming Code, invented by Dr. Richard Hamming, who remains highly active in computer research at Bell Laboratories, is regarded as the practical base of useful software and programming. The first hardware for a compact transistorized computer and was built by Mr. Jean Felker, now a vice president of the Bell Laboratories in charge of our major program of automation of the business operations of the Bell System.

And the revolution is still in full course. Each No. 4 ESS switching system using digital signals by the time division can handle 107 thousand terminations, and with the associated processor (the computing function) will handle at least 350 thousand telephone calls an hour in a way that hundreds or even thousands of operators could never be expected to manage. The first field

unit, now being completed jointly by Bell Laboratories-Western Electric experts at the Indian Hill Laboratory, near Western's Lisle, Illinois Plant, is scheduled for operation in January of 1975 on the Chicago-7 exchange, and will be in routine commercial service a year later. It represents a culmination of decades of steady innovation, which has, in summary, also provided the cultural, economic and also military era of the digital supplement to the brain and its sensors.

In view of this history, which is disputed by none (even the date communications Policy in the White House to reflect that "... public evidence indicates overwhelmingly that AT&T has been and continues to be the principal innovator in this field," in a paper of 1972), is it any wonder that we are baffled and even dismayed to find that such continued technical progress as the end-to-end (and ultimately switched) DATA-PHONE digital service (DDS), developed and readied by the Bell System, has not yet been permitted to operate? This network, which can be extended readily nationwide, is equivalent to a new national resource. In many nations, it could represent a major step into the future, and would be of primary value of our own economy, social order, and education through the digital processing facilities it can enable. Do we not soberly have to inquire whether dogmatic application or interpretation of theories of competition should be used to deprive a nation of new ways to expedite its business, its government, its social structure with the help of tens of thousands of terminal machines, educational devices, and organizing resources that it would interconnect?

One final point should be made about switching innovation. It concerns subsystems called PBXs, all those pieces of terminal gear which distribute the calls on a small scale within offices, factories, and institutions. It is readily admitted that these, like the key telephones and DATA-PHONES, are directly derived, wherever they are made, from Bell System science and engineering. The point is that they too come from our Laboratories' efforts in a ceaseless quest for new services, because of the potentials and properties of the total integrated system. Their technology is in no way rooted in a general market enterprise. Coordinately, the switching times and talking and other signaling habits of users, to which these machines should respond, must harmonize intimately with the properties and behavior (and behavior is the right word for the massive network we have earlier described) of the nationwide capability with which they are connected. Our issue is that effective research, invention, development and engineering on these units is also best stimulated when done as a part of the system to which they belong. One aspect of this principle is that we are creating many of the functions of PBX hardware that has previously had to be in the offices of hotels, motels, small businesses, schools, etc., by programming the new capacities of central electronic switching machines. In this way, the user gets all the advantage of personalized, localized service without having to have the facilities in his buildings and on his mind.

The principle of systems-induced innovations extends to many other communications advances to which the fallacy of market competition might carelessly be applied. Thus, in the primary matter of materials, which represent a major cost of the telephone plant, there is of course a vast industry, covering all the metals, plastics, rubbers, ceramics, and other major classes of substance, which innovates vigorously for its own purposes. Yet even here the stimulus of the Bell System plant which we have to live with, as well as to create, has led the Bell Laboratories to be a principal source of modern materials science and engineering. This is currently documented in a study of a special committee of the National Academy of Sciences, which has recently issued the report, "Materials for Man's Needs," and which is correlated with the recent National Materials Policy Commission findings as well. Here again our vertically integrated structure and, above all, the direct partnership with the Western Electric (which requires and processes nearly every form of matter into a durable plant of high quality) has led to unceasing innovation. This ranges from the recent invention of electrodes for the rapid and efficient reclaiming of electrical quality copper from etchants, and design of new nozzles for the continuous casting of copper rod at Western Electric Co., to the restructuring of the molecules of our principal synthetic material, polyethylene. Polyethylene is the primary insulator and protective agent for

the electrical conductors of telecommunications, and now of our whole electrical industry, including power. One particular example of how its molecules were adapted to replace lead as the sheathing for communications cables may be of interest. This has been achieved over the past 25 years of concerted research and development, in close collaboration with the major chemical suppliers. Nevertheless, the manufacture of the cable and the actual compounding of the ingredients to make the sheath have all been effected in the Western Electric Company in partnership with Bell Laboratories technology. The actual savings in materials costs over this period, compared to the simple purchase of lead which was the standard sheathing until then, are something over \$2 billions, or slightly more than the total expense for research and fundamental development at Bell Laboratories in that time. But this leaves out any evaluation of the superior performance, the improved handling, the easier maintenance which have accrued to the benefit of the telephone user throughout that span. Further, the world consumption of lead has been drastically eased by this technology, for with the United States and world production of power cables alone, which quickly adopted the discoveries in the Bell System of how to make durable plastic sheathing, the mining and refining activities of lead consumption otherwise would have scarred the earth and polluted the air and water in forms far more serious than have actually been necessary. Even the widespread consumer conveniences of polyethylene squeeze bottles were drastically facilitated by these discoveries for they taught how to synthesize polyethylene and to process it so that it would sustain the bending stresses encountered in all such uses, as well as in cable sheathing. There is little point in speculating whether in fact in time a general market development might have produced appropriate polyethylene for cable sheaths, for the venture did not happen that way. And venture it was, for no one before had replaced a major structural metal on this scale with a synthetic material which had to last for 40 years or more. We had our stumbles; innovation anywhere, and especially on the scale of the Bell System, is a risk venture. Dealing with technological risk is a big part of our activity. And, again, unlike the general market quasi-competition, we have a live with what we do, and do not sell it and walk away, as is the classic *caveat emptor* doctrine of much market entrepreneurship.

In this report to you of the role of network responsibility and vertical integration in the technical progress of telecommunications and electronics, we have treated what exists. But in many ways this is but prologue for the future if we are given a chance. We shall not boast of future accomplishments: we do have faith and are fully committed to the future in our actions and projections, right now. Whatever precarious signals one can feel are detectable for the future in science and engineering seem even more exciting and productive than in the past. New combinations of metals and insulators, operating at near absolute zero, were conceived by Anderson and Josephson, as the Josephson junctions, and realized first in our laboratory by Anderson and Rowell at Murray Hill. They will measure 10^{-14} volts, a quantity of electrical potential so small that it opens new horizons of thought about signals and their processing. In the work of Walter Brown, Walter Gibson and their associates at Bell Telephone Laboratories on the implantation of nuclear projectiles as ions into thin films of semiconductors and insulators, we are finding completely new modes of electronic behavior. A derivative of the channeling studies of iron bombardment was a time measurement by Gibson of 10^{-17} seconds, thousands of times smaller than any meaningful interval of time ever characterized before. With such basic elements of nature as the second, the volt, the numbers of quanta from a laser being drastically cast into new dimensions, and also with the heroic engineering and scientific capabilities of those same digital computers, whose origins we described earlier, we believe a new world of communications and information processing beckons brilliantly in the times ahead. We have written often and can make available in any depth desired our estimates of what these capabilities mean to the progress of our society and to the maintenance of its personal and institutional freedoms. It is sufficient to say that the struggle for world position and for ideological value and its acceptance will depend heavily on how well modern communication and information methodology is put at the service of a particular society or nation.

In this regard, we have spoken of the central part of digital signals and computers. The oncoming optical communication systems depending on glass

fibers as the successor to metal wires for wave transmission are superbly related to handling of electrical pulses which are the expression of digits themselves. Giordmaine, Rentzepis and their associates at Bell Laboratories have found pulsing properties of lasers that go a million million times a second. Now you have heard of the great communications advances caused by getting into the megacycle or million cycle range, and subsequently, in the gigacycle or billion cycle range, as we are doing in radio transmission. This has taken generations of ingenious electronics. You probably know that all communication satellites use a high frequency tube developed at Bell Laboratories, called the traveling wave tube. But we are now approaching even solid state successors to that gigahertz facility. What we are saying here now is that the future suggests in optical systems a step ahead (a bandwidth improvement, in technical terms) of a thousandfold. Further, we have produced this year glass fibers whose losses of transmission are tens of thousands of times less, than any glass produced until this program was begun, and whose optical configuration is superior for wave confinement and movement beyond anything achieved before. With 12 db of loss per kilometer in technical terms, the need for optical amplifiers is so thrifty that inter- as well as intracity links are of high promise. Indeed, there may be some irony in a concept proposed long ago, but only publicized in recent years, as something which only governments should undertake because private industry could never manage it—something called The Wire City. It is quite possible that what may be achieved will have no wires whatever, or at least will depend mostly on a social nerve network built of optical fibers. However this turns out, one thing about the topic is abundantly clear. That is, that the existing telecommunications network, including especially its many digital elements that we have been permitted to implement, such as T1 and T2 digital transmission systems, is the engendering factor in promoting this new science and technology. For example, already at the Bell Laboratories, co-located with the Western Electric's cable and wire plant in Atlanta, Georgia, and going forward in intimate partnership with our Western Electric associates there, is vital new development of cables, splices, joints and composites of these less-than-hair-thick conductors of light. Here too, for biology, medicine, diagnostics in the human system and elsewhere, many corollary innovations may be produced. For the fiberglass technology that the communications system has evoked is as far beyond the excellent progress of the glass industry and the optical companies up to now as their revolutionary schemes were beyond the lenses of the illustrious past.

So we have been permitted herewith to describe some features of how the Bell System has evoked and applied technical innovation. As I have personally seen and participated in it, I have felt obliged during these 35 years to maintain intimate association with our contemporaries in government, universities, and industry as this Twentieth Century Age of Engineering and science has evolved. This has led to many ventures, such as the first communications satellite, which was created by the Bell System, and subsequently, on the basis of these systems technology and engineering themes we have espoused, to the engineering guidance of the Apollo Mission (through our Belcom subsidiary). Of course, there were many other national services, conducted for the Department of Defense and other government agencies, made again in full fusion of effort with the Western Electric Company and the operating elements of the system.

It is the course of this work, and much other with which we have kept fully current involving all other modes of innovation and discovery throughout the world, that simply leads me to my concluding plea to the Hart Subcommittee. For in the course of these associations (some small additional evidence of the personal part appears in an added list attached to this script) there has emerged both by the testimony of our peers in other laboratories and institutions, including the Government, and by our first-hand findings, that disintegration of the Bell System would destroy Bell Telephone Laboratories. The forceful professional competition, the stimulus of the insatiable demand and opportunity of the operating network for innovation (for improvement, for economy and for efficiency), the personal excitement and commitment to see realized in honest technical terms, through the partnership of the Western Electric, the actual manufacture and installation of new ideas, invention, concepts—all of these will not survive dismemberment. Those of us who have worked for decades to attract and help fulfill the

human goals of our professional community working toward a common purpose know that it will not stay together under fracture of the System, or even under indefinitely continued harassment.

Yet the alternatives of being allowed to go forward are achingly alluring, for we represent now the youngest engineering and science laboratory in the country, according to the median age of our professional staff, as surveyed by the Livermore Scientific Laboratory (Zan Attan Study) of a couple of years ago. With a population of median age in the low 30s we find an aggregation of talent, including some 2,000 Ph.D.'s, never before focused on a defined and common purpose. But it is, accordingly, a fragile community. Each individualistic member who will do the creating and inventing and co-working with the Western Electric and the Operating Companies has to be convinced that it is a doable and practical task. Our experience in organizing the National Energy Research and Development Programs in the past year demonstrates poignantly that in vast systems, such as electrical utilities, fragmentation of engineering and systems operational courses and endeavors is disastrous. What a bitter turn of history it would be to find that the casual application of a vague, outworn and never proved myth, that "technosystems" should be controlled by a casual salesmanship of hardware really made for something else, should result in destruction of an existing one of those institutions which we are trying so hard to create in other fields.

The notion that Bell Laboratories could endure and function away from the Western Electric and the operating integrated Bell System would be laughable were it not so sinister and so ominous. But almost equally as grave a threat is contained in measures that would cut back the opportunities for Bell Laboratories, Western Electric and the operating elements of the enterprise to join together to use the best and bravest of discovery which our science and engineering can and will make for future service to the people of our nation. For as we have said, the stimulus to our thought comes from the bold and stirring challenge that if we can think of new digital networks, of new telephone instruments, of new modes of distribution like satellites and fiber optics, of new radio qualities like DUV, then we have in the Bell System's integrated affairs and skills this opportunity to see the thrust of human creativity converted to human benefits.

In engineering and science we have to depend on the evidence, and in these issues, wit which we conclude, some parts of the world show us the alternatives. One of them has been described by a senator of France (M. Adolphe Chauvin), as quoted in a recent publication: "The situation of the telephone service in the Paris region (400 thousand pending requests for new phones plus 100 thousand requests for transfer) has become a subject of sarcasm and jokes, when it does not generate anger. A Paris nightclub entertainer sings, 'one million Frenchmen wait for a telephone and seven million wait for the dial tone.'" The senator went on, "Last week one of my callers tried to reach me in the Senate from 10:00 in the morning until 5:00 in the afternoon when he finally succeeded. Either one does not get the dial tone, or the circuit is closed, or one is privileged to listen to unknown customers who are speaking about things which do not concern you."

Telephony is not the easiest pursuit in the world, and France is by no means the worst example of its difficulties. I can assure you, Mr. Chairman, from many discussions with my engineering and scientific counterparts in other telephone administrations, in the Penn Central Railroad, in Consolidated Edison Company, in certain airlines and other essential institutions, that our Government, if it wishes, can arrange for us to follow France and, with traditional American zeal, go down even deeper. But a wonderful option yet remains: that if our working structure is supported—not just tolerated and pulled at, but approved and affirmed—the path is upward, straight ahead.

WILLIAM O. BAKER

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 Board of Visitors of Tulane University
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 Board of Higher Education of New Jersey
 Management Advisory Council, Oak Ridge National Laboratory
 National Commission on Libraries and Information Science
 Institute of Medicine, and its Council, National Academy of Sciences
 National Council on Educational Research, National Institute of Education
 Energy Research and Development Advisory Council, Energy Policy Office
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 President's Science Advisory Committee
 Panel on Physical Chemistry for ONR
 National Science Information Council (Chairman)
 Editorial Advisory Board of *Chemical and Engineering News*
 Visiting Committee for Engineering of NYU, for Chemistry of Brookhaven National Laboratory, Princeton University and Rutgers University, and for Metallurgy of MIT
 Municipal Manpower Commission
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 Board of Governors of Scientific Research Society of America
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 Board of review, National Library of Medicine
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 Committee on Science and Public Policy, National Academy of Sciences
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 Committee on Physical Chemistry of Division of Chemistry and Chemical Technology, NRC
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 Editorial Advisory Board of *Journal of Polymer Science*
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 Visiting Committee for Dept. of Metallurgy and Materials Science, MIT
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Washington College—Visitors & Governors Scholar, Simmons Medal, Alumni Medal
 Princeton University—Harvard Fellow, Procter Fellow
 National Institutes of Health Lectureship, 1958
 AIC Honor Scroll, 1962
 Perkin Medal, 1963
 Priestley Medal, 1966
 Edgar Marburg Award, 1967
 ASTM Award to Executives for 1967
 Arthur J. Schmitt Lecturer at Notre Dame, 1968
 Industrial Research Institute Medal, 1970
 Harre'son Lecturer for 1971, North Carolina State University
 1972 Frederik Philips Award (Institute of Electrical and Electronics Engineers)
Industrial Research Man of the Year Award, 1973
 RLSA (Scientific Research Society of America) Procter Prize, 1973
 Herbert Spencer Lecturer, University of Pennsylvania, 1974

Contributor to:

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 Symposium on Basic Research, AAAS, 1959
Rheology, Vol. III, Academic Press, 1960
Technology and Social Change, Columbia University Press, 1964
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1942-1967, *Twenty-Five Years at RCA Laboratories*

Materials Science and Engineering in the United States, The Pennsylvania State University Press, 1970
Proceedures of the Twenty-Third National Conference on the Administration of Research, Denver Research Institute/The University of Denver, 1970
A Look At Business In 1990—A Summary of The White House Conference on the Industrial World Ahead, 1972.

Author of about 75 research papers in *J. Am. Chem. Soc.*; *J. Chem. Phys.*; *Phys. Rev.*; *Ind. Eng. Chem.*; *J. App. Phys.*; etc. Holder of thirteen patents. Noted in *Fortune* magazine survey as one of nation's ten leading industrial scientists (1954).

EXHIBIT 8.—*Prepared Statement of Mr. Walker*

PREPARED STATEMENT OF RICHARD WALKER, PARTNER, ARTHUR ANDERSEN & CO.

RE METHODOLOGY USED IN "STUDY OF REVENUES AND COSTS FOR RESIDENCE TELEPHONE SERVICE"

My name is Richard Walker, 69 West Washington Street, Chicago, Illinois, and I am managing partner of the Regulated Industries Division of Arthur Andersen & Co., independent public accountants. Among our clients are about one-third of the electric and gas companies in the United States and a substantial portion of the independent telephone industry. Among the special services we perform are economic and financial studies, including cost of service and cost allocation studies.

The American Telephone and Telephone Company has prepared a report entitled *General Description, Detail Methods and Results of the Study of Revenues and Costs for Residence Telephone Service*. This study sets forth the relationship of the average cost of rendering one party residence exchange (local) telephone service and the average attributable revenues for a test month. This service, simply stated, is defined in the study as consisting of a basic telephone, wiring in and to the residence, cable plant connecting to the exchange, and certain central office terminations and equipment.

Two costing methods, "Embedded Direct Costs" and "Fully Allocated Costs" have been employed in this cost finding process. These particular costing methodologies are consistent with those which have been used in other public utility situations for comparing historical costs of service by class and related revenues. These methodologies are not those which are used to produce measures of incremental costs, avoidable costs, out-of-pocket costs, or reproduction costs. The overall results under the two costing methods are not significantly different.

The definitions and costing methods are set forth in the report referred to above and in the statement of Mr. M. G. Killoch which appears as an Appendix to the testimony of Mr. E. B. Crosland. The study shows, as set forth in Mr. Crosland's testimony and in Mr. Killoch's statement, that average revenues for one party residence exchange service is less than 60% of the cost of rendering that service.

We have reviewed the methodology of the study to determine whether the costing methods used are reasonable application of costing procedures of this kind. We reviewed them in the light of the general substantive conclusion that costs of the designated residence service materially exceed related residence revenues and not to determine whether they produce results which are precisely accurate. We have made no study and express no opinion as to whether these cost studies are an appropriate basis for telephone rate setting. We have also considered alternative steps in the methodology and the use of alternative data assumptions (such as rate of return) which might also be considered reasonable, to determine if they might produce a different substantive conclusion.

We have not audited or otherwise checked the source data or the clerical accuracy of compilations and computations. We have not tested or reviewed the scientific validity of the various samples used in the study although we did determine that they were comprehensive. We observed that regulatory, geographical and other facts that existed in the study period (such as size of call areas, extent of measured service, type of rate base, etc.) were not revised as a part of the study methodology.

Based on the work which I have done and which has been done under my supervision and direction, and on the definitions of service, and costing methods set forth in the statement of Mr. Killoch, this is a reasonable application of this particular costing methodology and provides a basis for the substantive conclusion that one party residence exchange service costs materially exceed revenues on each of the two bases indicated. Further, our tests indicate that the substantive conclusion is insensitive to the use of alternative reasonable assumptions as to cost components and cost allocation factors.

EXHIBIT 9.—*NARUC Report After Investigation*

EXHIBIT 9.—*NARVC Report After Investigation*

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
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COMMITTEE ON COMMUNICATIONS

AN INVESTIGATION INTO THE ECONOMIC AND QUALITY OF SERVICE
IMPACT ON TELEPHONE SERVICE SUBSCRIBERS RESULTING FROM
THE INTERCONNECTION OF SUBSCRIBER-PROVIDED EQUIPMENT
TO THE PUBLIC SWITCHED TELEPHONE NETWORK, AND FROM
COMPETITION BY THE SPECIALIZED COMMON CARRIERS
IN THE PROVISION OF TELECOMMUNICATION SERVICES

REPORT AFTER INVESTIGATION



WASHINGTON, D.C.
MAY 15, 1974

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SUMMARY OF REPORT

The NARUC has long urged that resolution of the threshold question of whether there will be an adverse economic and service impact on ordinary telephone subscribers, and if so, the probable extent thereof, is an indispensable predicate for developing sound public policy concerning specialized point-to-point communications common carriers and the interconnection of customer-provided telephone station equipment to the public network. Yet, at the time the instant investigation was instituted, the NARUC had been able to obtain only a promise by the FCC to undertake the necessary investigation at some indefinite time in the future.

For this reason, and in the belief that the facts should be known sooner, rather than later, the Committee on Communications of the NARUC deemed it necessary in the public interest to undertake its own fact-finding investigation and present the results thereof to Congress, the Federal Communications Commission, and the American people at the earliest practicable date.

On the basis of its investigation, including independent analyses by its staff, the Committee is convinced that under current regulatory policies, there will be a substantial adverse economic impact on local exchange telephone subscribers resulting from interconnection (principally of private branch exchanges and key telephone systems) and specialized common carrier competition, and further, that the most likely competitive responses by the existing common carriers will serve to exacerbate the near-

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term impact to the detriment of the local exchange subscriber.

Specifically, the Committee estimates that by 1980 the "cost" of interconnection in terms of higher local service rates will range at a minimum from approximately \$600 million to \$1.0 billion annually, depending upon the nature and extent of the competitive responses of the existing carriers, and by 1984 this total is expected to reach approximately \$1.5 billion to \$1.7 billion annually. On a cumulative basis, these costs are estimated to range at a minimum from approximately \$2.0 billion to \$4.0 billion by 1980, and from approximately \$6.7 billion to \$9.6 by 1984.

Translated, these costs amount to a minimum of approximately \$8 to \$13 annually per residential subscriber by 1980, and from approximately \$18 to \$19 annually per residential subscriber by 1984.

The Committee further concludes that residential subscribers almost inevitably will be required to bear the cost of these policies, since they are the only class of telephone user which could absorb such costs without an adverse reaction in the competitive services. By 1980, the Committee estimates that a minimum increase of 8 to 13 percent would be required in residential exchange rates to offset the cost of interconnection and specialized common carriers, and by 1984, a minimum increase of 15 to 16 percent would be required. Such increases would be solely due to competition in telecommunications and would be exclusive of normal increases that could be expected from other

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causes during this period of time.

With respect to the impact of interconnection within the telephone industry, the minimum cost to the independent subscribers is estimated to range from approximately \$70 million to \$160 million annually by 1980, compared to a minimum of approximately \$290 million to \$580 million annually for Bell System subscribers, and by 1984 the cost is estimated at a minimum of approximately \$120 million to \$170 million annually for independent subscribers, compared to a minimum of approximately \$800 million to \$860 million annually for Bell System subscribers. Because independent companies generally serve more rural and less densely populated areas of the country, the Committee concludes that interconnection may well have a significant adverse effect on the availability of local telephone service at a reasonable price in these areas of the country.

At the present time, however, the Committee is unable to draw any firm conclusions as to whether the overall quality of telephone service has been significantly affected to date by interconnection. Nevertheless, it has resulted in inordinate maintenance difficulties for the telephone industry, and it is likely that absent diligent regulatory attention to this problem, a significant adverse effect would appear should interconnection become more prevalent.

In light of its investigation and conclusions, the Committee makes the following recommendations concerning interconnection policy:

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*Grievances of large institutional subscribers relating to the adequacy of PBX's and key telephone systems should be redressed by traditional regulatory procedures and not by permitting interconnection of customer-provided equipment.

*An informal program of standards and certification should be adopted by the telephone and computer industries relating specifically to the terminal equipment required for data communication transmission.

*A certification program, possibly utilizing independent certification laboratories not associated with any regulatory agency, manufacturer or distributor, should be adopted specifically for ancillary equipment connected to the network, such as answering devices, automatic dialers and call diverters. The Committee also urges the telephone industry to establish a compensatory one-time installation charge for the necessary connecting arrangements, with related maintenance work charged for on an as-needed basis.

With respect to specialized common carrier competition, the cost quantified by the Committee results from diversion of interstate toll traffic to low-priced private line service, which increases the amount of local plant telephone service costs assigned to intrastate service. Since there is already a critically urgent need to allocate more such costs to interstate service, rather than less, the Committee strongly believes that an expedited, comprehensive reevaluation of current separations philosophy and procedures should be immediately undertaken.

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Finally, the Committee believes it is apparent that those advocates of interconnection and specialized common carriers who believe that any adverse economic consequences would be adequately detected and corrected as they appeared, substantially misconceive the nature of the impact at issue. In fact, the primary issue as to economic impact is not whether existing telephone companies will experience a net reduction in operating revenues. Rather, it is clear that the primary impact results from shifting costs of service from one class of user to another, whether as a natural consequence of competitive penetration or as a consequence of the competitive strategies adopted by the telephone companies. It is further clear, in the Committee's judgment, that rationalizing such a shift in costs by embracing one theory of cost accounting or another does not change the end result of higher local exchange telephone rates for the average individual user.

The inherent vice of permitting a mixture of regulation and unregulated competition, the Committee concludes, is that the adverse impact on subscribers of the monopoly service occurs subtly and cannot be detected from information normally furnished to the regulatory agencies in the ordinary course of business. Accordingly, continued refusal to acknowledge the very real and substantial economic threat of interconnection and specialized common carriers only ensures that the threat itself will become an accomplished harm. What is needed now is an affirmative regulatory strategy for mitigating or averting such harm entirely.

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COMMITTEE ON COMMUNICATIONS

AN INVESTIGATION INTO THE ECONOMIC AND QUALITY OF SERVICE
IMPACT ON TELEPHONE SERVICE SUBSCRIBERS RESULTING FROM
THE INTERCONNECTION OF SUBSCRIBER-PROVIDED EQUIPMENT
TO THE PUBLIC SWITCHED TELEPHONE NETWORK, AND FROM
COMPETITION BY THE SPECIALIZED COMMON CARRIERS
IN THE PROVISION OF TELECOMMUNICATION SERVICES

REPORT AFTER INVESTIGATION

I. INTRODUCTION

The telecommunications industry is now undergoing a revolution as pervasive and significant in its implications as the advent of regulation itself. For decades, the appropriateness of a telephone company operating as a monopoly and providing end-to-end service regulated by State and Federal governmental agencies has been essentially unchallenged by either the public or the public officials involved.

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Recently, however, certain of the fundamental service and regulatory principles developed over the years has come under serious question, and advocates of change have appeared within and without the ranks of the regulatory community and the industry it regulates. In turn, the arguments for change have found expression at the Federal level in the form of two significant departures from long standing public policy:

(1) Permitting the substitution of various kinds of subscriber-provided station equipment, such as private branch exchanges (PBX's) and key telephone systems (KTS), for equipment formerly provided exclusively by the telephone company; 1/ and

(2) The grant of authority to new companies to establish and operate specialized point-to-point communication transmission facilities, principally for the communication of data and voice via microwave technology, over high density routes in competition with services provided by existing communication common carriers.2/

As¹ may be expected in any case in which fundamental change is proposed, the economic, social and legal issues raised by permitting interconnection and specialized common carriers are exceedingly complex, and a deep-seated division of opinion has developed among those concerned with the regulation of telephone service in the

1/ The customer-provided equipment is interconnected to the public telephone network. As a result, the term "interconnection" has come to refer generically to the process of substituting customer-provided terminal equipment for equipment provided by the telephone company.

2/ Hence, the term "specialized common carriers" is used to refer to this newly authorized class of communication carrier.

United States concerning the essential wisdom of those changes in policy and its impact on the average user of telecommunication services. For this reason, an understanding of the context in which this report is issued requires that a brief review be made of the background of the controversy and the NARUC's role therein, culminating in the instant investigation.

Interconnection of Subscriber-Provided Equipment

The recent impetus for interconnection stems from the landmark Carterfone decision,^{3/} in which the Federal Communications Commission (FCC) held that Bell System interstate tariffs prohibiting the use of the Carterfone and other interconnecting devices without regard to the actual harm caused to the interstate telephone network are unlawful. This decision, in turn, resulted from the referral by a United States District Court to the FCC of the question of the lawfulness of the tariffs and practices of AT&T and General Telephone Company of the Southwest, as they applied to the Carterfone, which arose in a private anti-trust action brought by Thomas F. Carter against the foregoing telephone companies.^{4/}

The Carterfone itself is a device which, through an inductive and acoustic process, couples private mobile radio systems to the telecommunications network, thereby "patching" mobile radio operators

3/ In the Matter of Use of the Carterfone Device in Message Toll Telephone Service, 13 FCC 2d 420 (1968); reconsideration denied 14 FCC 2d 571 (1968).

4/ Carter v. AT&T, 250 F. Supp. 188 (N.D. Tex. 1966), aff'd 365 F. 2d 486 (5th Cir. 1966).

with telephone subscribers, but its use by mobile radio base station operators was prohibited by interstate tariffs, which provided that:

No equipment, apparatus, circuit or device not furnished by the telephone company shall be attached to or connected with the facilities furnished by the telephone company, whether physically, by induction or otherwise....

In holding this provision to be unlawful the FCC stated:

...[O]ur conclusion here is that a customer desiring to use an interconnecting device to improve the utility to him of both the telephone system and a private radio system should be able to do so, so long as the interconnection does not adversely affect the telephone company's operations or the telephone system's utility for others. A tariff which prevents this is unreasonable....

* * *

There has been no adequate showing that non-harmful interconnection must be prohibited in order to permit the telephone company to carry out its system responsibilities.... No one entity need provide all interconnection equipment for our telephone system any more than a single source is needed to supply the parts for a space probe. We are not holding that the telephone companies may not prevent the use of devices which actually cause harm, or that they may not set up reasonable standards to be met by interconnection devices. These remedies are appropriate; we believe they are also adequate to fully protect the system. (13 FCC 2d at 424).

To implement the Carterfone decision, the telephone industry field revised tariffs with the State commissions and AT&T filed revised tariffs No. 259 (Wide Area Telecommunications Service), 260 (Private Line Service) and 263 (Long Distance Message Telecommunications Service), to be effective January 1, 1969, which liberalized the prohibition

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against interconnection of subscriber-provided equipment and established certain conditions for such interconnections:

(1) Subscriber-provided terminal equipment could not endanger the safety of telephone company employees or the public, damage or require changes in or alterations of the equipment or other facilities of the telephone company, interfere with the proper functioning of such equipment or facilities, impair the operation of the telecommunications system or otherwise injure the public in its use of the telephone company's services;

(2) Direct connection to the public network must be made through telephone company provided and maintained connecting arrangements (CA's);

(3) Network control signaling functions must be performed by network control signaling units (NCSU's) provided and maintained by the telephone company; and

(4) Subscriber-provided terminal equipment must meet minimum protection criteria which limit power and frequency input to the network.

The FCC permitted these tariffs to go into effect, holding that the prohibition against customer-provided NCSU's and CA's do not violate its decision in Carterfone.^{5/} In pertinent part,

^{5/} In the Matter of AT&T "Foreign Attachment" Tariff Revisions, 15 FCC 2d 605 (1968), reconsideration denied 18 FCC 2d 871 (1969).

The FCC stated:

'Our decision in Carterfone does not hold that a customer may substitute his own equipment or facilities (whether it be telephone instruments, loops, poles, or central office equipments) for that furnished by the telephone company in providing message toll telephone service as that service is defined in the tariff. Our decision dealt with interconnections and not replacements of any part of the telephone system.... (15 FCC 2d at 609-610).

In the intervening years, however, the efforts of the FCC related to interconnection have largely been devoted toward implementing and expanding the liberalized policy it announced in the Carterfone and Foreign Attachment decisions. In June, 1969, the FCC contracted with the National Academy of Sciences for a study and report evaluating the technical feasibility of expanded interconnection.^{6/} Subsequently, the Commission created two technical advisory committees to study the possibilities of initiating a program of interconnection through standards and certification for selected classes of terminal equipment, including customer-provided PBX's,^{7/} automatic dialers and recording and answering devices.^{8/} The FCC has also initiated a Joint Board proceeding under Section 410(c) of the Communications Act, 47 U.S.C. Sec. 410(c), to determine whether, and to what extent, there may be a public need to permit customer-provided NCSU's and CA's and, if so, what terms and conditions should apply in any such program to protect

^{6/} A Technical Analysis of the Common Carrier/User Interconnections Area, June 1970.

^{7/} 28 FCC 2d 403 (1971).

^{8/} 33 FCC 2d 526 (1972).

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the telephone system and services of others.^{9/}

Most recently, at the request of the trade association for the interconnect industry and certain of its members, the FCC issued a declaratory order asserting primacy in authority over interconnect matters to the exclusion of any State regulation which may have the effect of "impairing" FCC policy.^{10/}

Specialized Common Carriers

In July, 1970, the FCC instituted a rulemaking proceeding to determine the appropriate disposition of a large number of applications which had been filed by parties seeking authorization to construct microwave facilities to provide specialized point-to-point communication services over high density routes in various parts of the country in competition with the private line services offered by existing communications common carriers, principally AT&T's Long Lines Department.^{11/} At that time there were 1,731

^{9/} In the Matter of Proposals for New or Revised Classes of Interstate and Foreign Message Toll Telephone Service (MTS) and Wide Area Telephone Service (WATS), Docket No. 19528, 35 FCC 2d 539 (1972).

^{10/} In the Matter of Telerent Leasing Corporation, et. al., Petition for Declaratory Rulings on Questions of Federal Pre-emption on Regulation of Interconnection of Subscriber-Furnished Equipment to the Nationwide Switched Public Telephone Network, Docket No. 19808, 45 FCC 2d 204 (1974).

^{11/} In the Matter of Establishment of Policies and Procedures for Consideration of Applications to Provide Specialized Common Carrier Services in the Domestic Public Point-to-Point Microwave Radio Service and Proposed Amendment to Parts 21, 43, and 61 of the Commission's Rules, Docket No. 18920, 24 FCC 2d 318 (1970).

pending applications for microwave stations, and as of March 15, 1971, there were 33 applicants with 46 separate proposals for a total of 1,877 microwave stations.

One large group of applications was submitted by Data Transmission Corporation (Datran) which proposed a switched, all digital network dedicated exclusively to the transmission of data communications. Other applications, filed by companies associated with Microwave Communications of America, Inc. (MCI) and by other parties, proposed point-to-point facilities for private line services including, but not limited to, data transmission.

By its First Report and Order,^{12/} the FCC ruled that as a general policy the public interest would be served by permitting the entry of new carriers in the specialized communications field and that comparative hearings on the economic mutual exclusivity of the applications of such carriers were neither desirable nor necessary. In its ultimate conclusion, the FCC stated:

We find that: there is a public need and demand for the proposed facilities and services and for new and diverse sources of supply, competition in the specialized communications field is reasonably feasible, there are grounds for a reasonable expectation that new entry will have some beneficial effects, and there is no reason to anticipate that new entry would have any adverse impact on service to the public by existing carriers such as to outweigh the considerations supporting new entry. We further find and conclude that a general policy in favor of the entry of new carriers in the specialized

^{12/} 29 FCC 2d 870 (1971).

communications field would serve the public interest, convenience and necessity. (29 FCC 2d at 920).

To the extent that economic impact issues were dealt with in the decision, the essential criteria utilized were whether existing common carriers would likely experience a net reduction in overall operating revenues as measured against the revenue levels existing at the time of the decision. Thus, it was observed that the intercity service revenues deemed vulnerable to competitive diversion constituted only a minor portion of the Bell System's overall operating revenues, and that the growth of the non-vulnerable services undoubtedly would more than offset any revenue diversion to the specialized common carriers. Interstate Message Toll Telephone Service (MTS) was deemed to be immune from economic impact because the specialized common carriers were proposing to provide only private line services. Finally, since the independent telephone companies participated only to a limited extent in providing intercity services, it was believed that the absence of an adverse revenue effect on the Bell System perforce demonstrated that independent companies would likewise experience no adverse effect.

At the same time, the FCC concluded that it could adequately deal with any adverse economic effect upon existing carriers that may appear at some future time.

In the NARUC's opinion, however, the foregoing analysis was a wholly inadequate treatment of the issue as to whether the competitive entry of the specialized common carriers would likely have an adverse economic effect on telephone service subscribers,

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and this is a principal assignment of error urged by the NARUC in its appeal of the decision to the United States Court of Appeals for the Ninth Circuit.^{13/} Although a decision on the appeal is pending as of the date of this report,^{14/} the FCC is continuing to process applications by companies seeking to enter the specialized common carrier market, and service has been instituted on at least a limited basis by certain of the successful applicants.

Unresolved Issues

The controversy over interconnection policy--and the principal concerns of the NARUC related thereto--has primarily focused on two fundamental issues:

(1) whether the interconnection of customer-provided equipment will result in technical "harm" to the telephone network and consequent degradation of the quality of telephone service for all telephone subscribers; and

(2) whether permitting customers to provide their own station equipment will adversely affect, through the interaction of certain existing tariff and regulatory practices, the cost of telephone service for non-interconnected subscribers.

^{13/} NARUC v. FCC, No. 72-1198, consolidated with Washington Utilities and Transportation Commission v. FCC, No. 71-2919.

^{14/} Oral argument on the consolidated appeal was held February 15, 1973, but a decision has not been issued to date.

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All parties concede that the United States has the finest telephone system in the world, but opinions sharply differ as to whether the advantages of interconnection necessarily involve a significant trade-off in terms of the level of quality that has thus far been achieved, through inability on the part of the common carriers to prevent a significant quantity of inferior, malfunctioning or poorly maintained terminal equipment from being introduced into service.

Insofar as the economic impact of interconnection is concerned, it has been argued by the NARUC that the principal items of equipment that would be affected (i.e., PBX's, key telephone systems, etc.--so-called "vertical services") are priced by the carriers at the local exchange level substantially above attributable costs, so that revenue from these services in fact subsidize local exchange service rates, thereby making local telephone service more widely affordable for the American people than would otherwise be the case. To the extent that revenues from such services are diverted from the local exchange area, therefore, the effect would be to eliminate the subsidy of local exchange service, and it would be the non-interconnected subscribers--in other words, the vast majority of the telephone using public, including the poor, those living on fixed incomes, and other ordinary individuals of modest means--who would be required to pay a higher rate for their service.

Concern over the potential economic impact resulting from competition by specialized common carriers has centered on the fact that rates for intercity communication services have traditionally been averaged on a nationwide basis, so that the rates

charged for service between any two equidistant points are essentially the same, regardless of the specific costs of providing service along any given route. Thus, permitting specialized carriers to compete only on high density, low cost routes would result in diminishing the revenue contribution from private line services to overhead and common operating costs, thereby requiring an increase in rates for telephone service subscribers who have no need for the specialized services offered by the new competitors. In addition, it is argued that injecting competition into the private line market will require AT&T to lower some of its private line rates as a competitive response, which in turn would result in the diversion of toll traffic to the private line sector and, because of current separation procedures, would result in shifting costs from the interstate market back upon intrastate subscribers.

Each of the foregoing arguments is disputed in one manner or another by advocates of the new interconnection and specialized common carrier policies, who also argue that, in any event, whatever adverse impact there might be is outweighed by the public benefits of competition or could be offset in ways other than the prohibition of competition altogether.

The NARUC has long urged that resolution of the threshold question of whether there will be an adverse economic and service impact and, if so, the probable extent thereof, is an indispensable predicate for developing sound public policy concerning interconnection and specialized common carriers. Insofar as the State

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regulatory commissions are concerned, questions particularly as to the economic impact of such policies are extremely critical in view of the constant and seemingly unending applications for rate increases which they have been faced with for the past several years.

The NARUC's own tabulation (see Appendix A) shows that as of April 15, 1974, more than \$4.9 billion in annual rate increases have been sought by the Bell System alone from the State commissions since January 1, 1969, of which some \$2.9 billion has been granted and another \$.47 billion is pending. In sharp contrast, however, interstate toll rates during the same period of time have remained largely stable or have declined, due primarily to the fact that technological improvements in long distance calling have resulted in unit cost reductions that are not possible in local calling.

Yet it is the price of local service regulated by the States which primarily determines whether individuals can afford to have a telephone installed or not. Thus, any policy which aggravates the increase in local service rates--thereby threatening the widespread availability of service and jeopardizing the fundamental public policy goal of a telephone in every home--must be carefully scrutinized before a final determination is made as to whether it is in the public interest. This is particularly true in the case of interconnection and specialized common carriers, because these policies are largely designed to reduce the cost of communication for a relatively small number of businesses and other affluent users, with little or no benefit accruing to the large mass of telephone users.

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In this context, continuously since the time these policies were first taken under consideration, the NARUC has formally and informally, on every occasion open to it, urged in the most vigorous possible terms that the FCC should determine the impact of its policies on ordinary telephone users prior to implementing or expanding fundamental changes. Yet, at the time the instant investigation was instituted, the NARUC had been able to obtain only a promise to undertake the necessary investigation at some indefinite time in the future. For this reason, and in the belief that the facts should be known sooner, rather than later, the Committee on Communications of the NARUC deemed it necessary in the public interest to undertake its own fact-finding investigation and present the results thereof to Congress, the Federal Communications Commission, and the American people at the earliest practicable date.^{15/} It is to these ends that this report is dedicated.

^{15/} After the conclusion of the public hearings in this investigation, during the time in which this report was being prepared, the FCC instituted a general investigation of a number of issues, including the economic impact of interconnection and specialized common carriers. In the Matter of Economic Implications and Interrelationships Arising from Policies and Practices Relating to Customer Interconnection, Jurisdictional Separations and Rate Structures, FCC Docket No. 20003, FCC 74-344, adopted April 9, 1974 and released to the public April 10, 1974. In view of the results of its investigation, set forth hereinafter, the Committee believes that the time is now past for debating whether there will in fact be a significant adverse economic effect, and that regulatory efforts should now be devoted toward developing strategies for dealing with the impacts that can be expected.

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II. PROCEEDINGS IN THE INVESTIGATION

The investigation was instituted by Notice of Investigation issued by the Committee on November 16, 1973, which was served upon all State and Federal governmental agencies having an interest in or engaged in the economic and quality of service regulation of communication common carriers, as well as upon all known communication common carriers, manufacturers, suppliers, users and other parties previously indicating an interest in the issues under consideration. (See Appendix B for a list of the parties invited to participate.) The Notice contained a detailed description of the issues to be considered in the investigation, and parties desiring to participate therein were requested to so advise the Committee on or before December 10, 1973.

Direct testimony, exhibits and statements of position were filed with the Committee on or about February 8, 1974, by the American Telephone and Telegraph and associated Bell System Companies, the Association of American Railroads, Centerville Telephone Company, Central Telephone Company, Communication Certification Laboratory, Communications Workers of America,^{16/} Consulting Communications Engineers, Inc., Continental Telephone Corporation, GTE Service Corporation, Ironton Telephone Company, MCI Telecommunications Corporation, Mid-Continent Telephone Corporation, Phonetele, Inc., Rochester Telephone Corporation, Southern Pacific Communications

^{16/} CWA's filing consisted of a statement of position which was sent to the Committee on November 27, 1973.

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Company, United Telephone System and the United States Independent Telephone Association. Rebuttal exhibits and testimony were filed with the Committee on or about February 27, 1974, by Communications Certification Laboratory, Southern Pacific Communications Company and the United Telephone System.

In addition, by Notice dated February 16, 1974, the Committee requested certain supplemental information from various parties submitting testimony and exhibits in the investigation.

Public hearings were held in Washington, D.C. from March 4 through March 7, 1974, for the purpose of cross-examination of witnesses on their prefiled testimony and exhibits. The hearings were presided over by the Honorable Francis Pearson, Chairman of the NARUC Committee on Communications and member Commissioner of the Washington Utilities and Transportation Commission, with the assistance of the Honorable William R. Clark, member Commissioner of the Missouri Public Service Commission, the Honorable William Symons, Jr., member Commissioner of the California Public Utilities Commission, the Honorable Edward P. Larkin, member Commissioner of the New York Public Service Commission, the Honorable Marvin R. Wooten, Chairman of the North Carolina Utilities Commission, and the Honorable Archie Smith, Chairman of the Rhode Island Public Utilities Commission. Also sitting as the guest of the Committee was the Honorable William R. Stratton, member Commissioner of the District of Columbia Public Service Commission.

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Witnesses appeared on behalf of the Bell System Companies, Centerville Telephone Company, Central Telephone Company, Communications Certification Laboratory, Continental Telephone Company, GTE Service Corporation, Ironton Telephone Company, Mid-Continent Telephone Corporation, United Telephone System and the United States Independent Telephone Association, and were cross-examined principally by members of the NARUC Washington staff and the California Public Utilities Commission staff. Counsel for the Minnesota Public Service Commission and the Pennsylvania Public Utilities Commission also appeared and conducted cross-examination.

In addition, testimony, exhibits and statements of position submitted by the Association of American Railroads, Communications Workers of America, Consulting Communications Engineers, Inc., MCI Telecommunications Corporation, Phonetel, Inc., Rochester Telephone Corporation and Southern Pacific Communications Company were received in the record by the Committee as statements of position by stipulation of the parties.

Post-hearing briefs were filed with the Committee on March 29, 1974, by the Bell System Companies, Continental Telephone Corporation, GTE Service Corporation, Mid-Continent Telephone Corporation, United Telephone System and the United States Independent Telephone Association.^{17/}

^{17/} The motions to correct the hearing transcript filed with the Committee on March 18, 1974, by the Bell System Companies, Continental Telephone Corporation, and GTE Service Corporation are hereby granted and the record shall be so amended. In addition, the Committee notes that other minor corrections are required and shall be so noted in the record.

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The Committee wishes to emphasize that the investigation it has conducted is a fact-finding investigation aimed at as full and complete a report to the public on the issues considered as is possible at the present time. Accordingly, no burden of proof was assigned to any party and, to the extent that testimony took the form of argumentation, it was considered as such and given appropriate weight. Similarly, although the compiled record is substantial, the Committee has not deemed itself bound strictly by four corners thereof. The absence of conflicting evidence on any issue has not compelled the Committee to make any of the affirmative findings herein contained, and in arriving at its conclusions it has evaluated the contentions of the parties in light of other information that is publicly available and generally accepted as reliable.

III. SUMMARY OF PRINCIPAL CONCLUSIONS

On the basis of its investigation, including independent analyses by its staff, the Committee is convinced that under current regulatory policies, there will be a substantial adverse economic impact on local exchange telephone service subscribers resulting from the interconnection of customer-provided terminal equipment, principally private branch exchanges (PBX's) and key telephone systems (KTS), and from competition by the specialized common carriers in providing voice grade private line telecommunication services, and further, that the most likely competitive responses by the existing common carriers will serve primarily to exacerbate the near-term impact to the detriment of the local

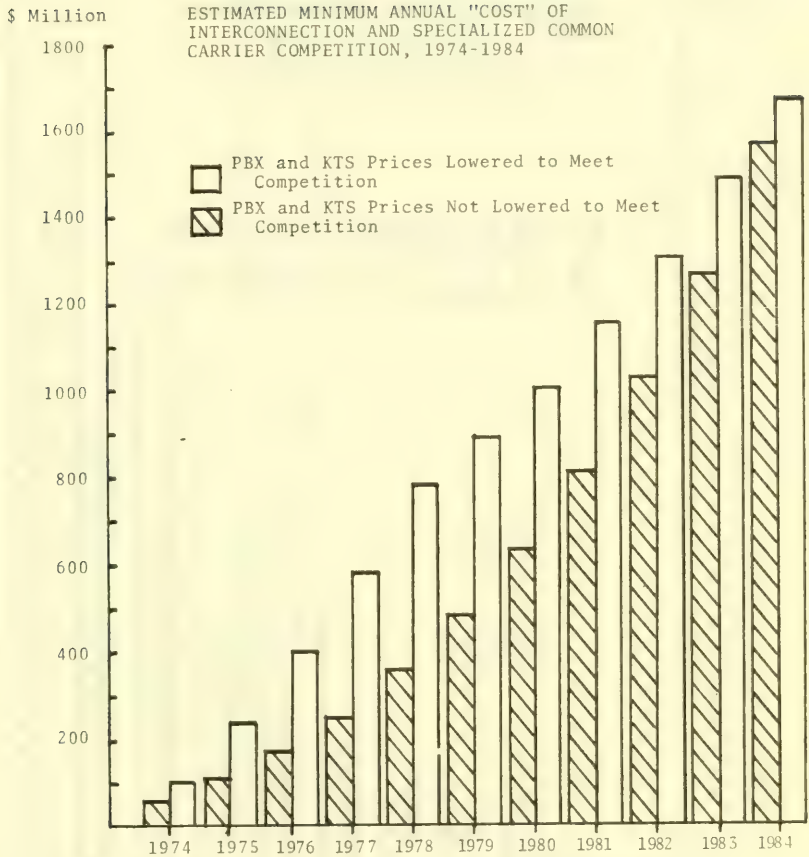
exchange telephone service subscriber.

By 1980, the Committee estimates that the "cost" of interconnection and specialized common carriers in terms of higher rates for local exchange service subscribers will range at a minimum from approximately \$600 million to \$1.0 billion annually, depending upon the nature and extent of the competitive responses of the existing carriers, and by 1984 this total is expected to reach approximately \$1.5 billion to \$1.7 billion annually. (See Figure 1). On a cumulative basis, these costs are estimated to range at a minimum from approximately \$2.0 billion to \$4.0 billion by 1980, and from approximately \$6.7 billion to \$9.6 billion by 1984, again depending upon the nature and extent of the competitive responses by the existing carriers. (See Figure 2).

Of these totals, the minimum cost of interconnection is estimated to be approximately \$360 million to \$740 million annually by 1980, and \$900 million to \$1.0 billion annually by 1984, with the minimum cost of the specialized common carriers estimated at approximately \$270 million annually by 1980 and \$620 million annually by 1984. (See Table 1). Translated, these costs amount to a minimum of approximately \$8 to \$13 annually per residential subscriber by 1980, and from approximately \$18 to \$19 annually per residential subscriber by 1984. (See Figure 3).

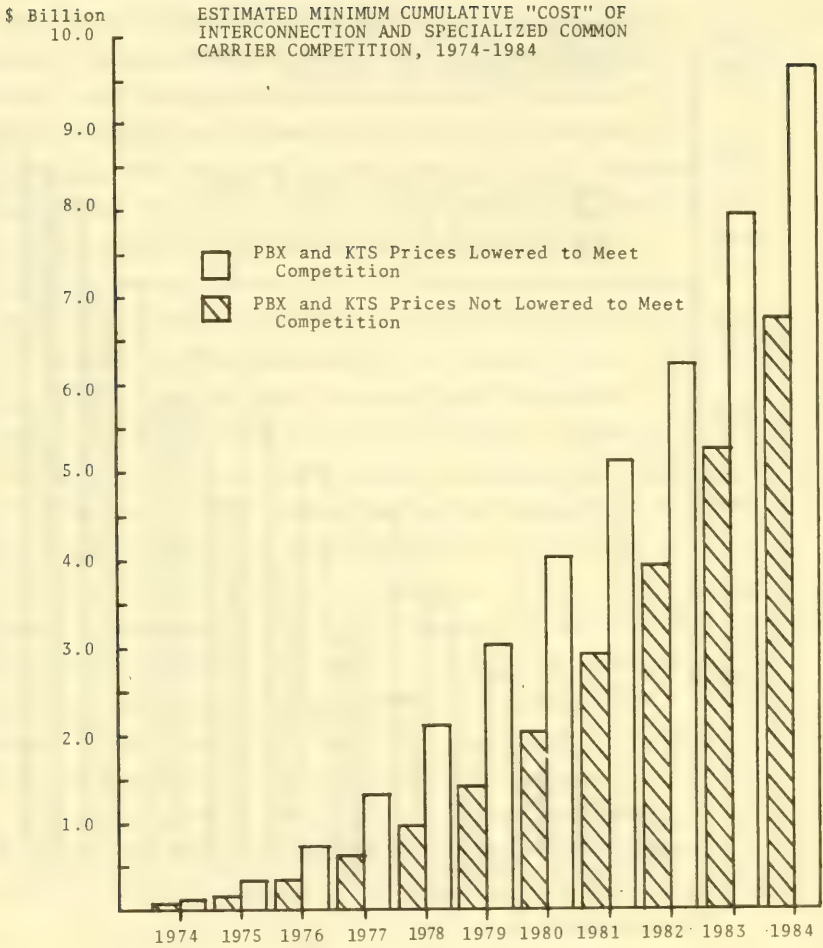
By the same token, if these costs were spread evenly among interconnected and non-interconnected business and residential subscribers, a minimum increase of six to nine percent in local exchange rates would be required by 1980, exclusive of normal rate increases that may

FIGURE 1



Source: Table 1

FIGURE 2



Source: Table 1

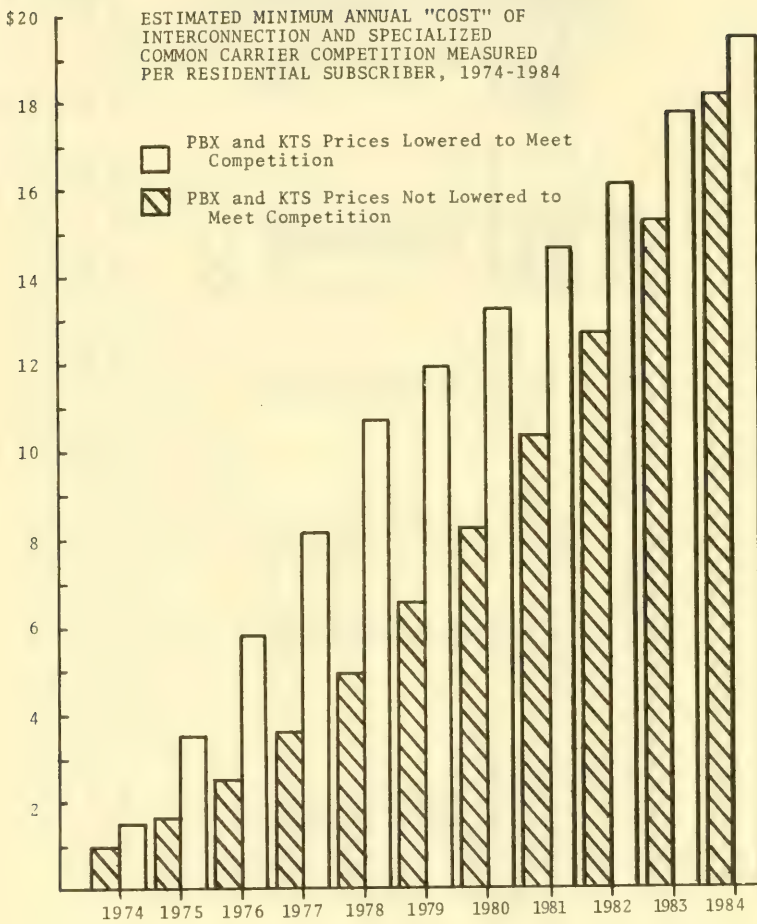
TABLE 1

COMPARATIVE ESTIMATED "COST" OF INTERCONNECTION
AND SPECIALIZED COMMON CARRIER COMPETITION, 1974-1984

\$ Million

Year	COMPETITIVE PRICE REDUCTION				NO COMPETITIVE PRICE REDUCTION			
	Minimum Annual Cost of Interconnection	Minimum Annual Cost	Minimum Cumulative Cost	Minimum Annual Cost of SCC Competition	Minimum Annual Cost of Interconnection	Minimum Annual Cost	Minimum Cumulative Cost	Minimum Cumulative Cost
1974	8	100	100	8	52	60	60	60
1975	27	237	337	27	80	107	167	167
1976	60	398	735	60	114	174	341	341
1977	97	479	1311	97	156	233	594	594
1978	144	634	2089	144	213	337	931	931
1979	204	688	2981	204	281	485	1436	1436
1980	270	744	3995	270	363	633	2069	2069
1981	344	808	5147	344	468	812	2881	2881
1982	427	1305	6452	427	592	1019	3900	3900
1983	521	878	7928	521	745	1266	5166	5166
1984	622	1660	9588	622	926	1548	6714	6714

FIGURE 3



Source: Tables C-14, C-15

be expected from other causes, and by 1984, a minimum increase of ten to eleven percent would be required. (See Table 2). Alternatively, if the State regulatory commissions attempted to confine the increase to interconnected and non-interconnected business subscribers, a minimum increase of 19 to 30 percent in line rates would be required by 1980, again exclusive of normal repricing upward that may be expected from other causes, and a minimum increase of 32 to 35 percent in the line rates would be required by 1984. (See Table 3). Such sharp increases, however, would add further impetus to interconnection as business subscribers attempted to achieve economies in their telecommunications costs, which in turn would require even sharper increases in the line rates to offset the cost of competitive penetration and ultimately would be largely, if not totally, self-defeating.

Thus, in the end, it would likely be the residential subscriber who must pay the cost of these policies in the form of higher telephone rates. By 1980, the Committee estimates that a minimum increase of 8 to 13 percent would be required in residential exchange rates to offset the cost of interconnection and specialized common carriers, and by 1984, a minimum increase of 15 to 16 percent would be required. (See Table 4). Again, these rate increases are exclusive of normal increases that could be expected from other causes during this period of time.

With respect to the impact of interconnection within the industry, the minimum cost to the independent industry subscribers is estimated to range from approximately \$70 million to \$160 million annually by 1980, compared to a minimum of approximately \$290 million

TABLE 2
MINIMUM ESTIMATED INCREASE IN BUSINESS LINE AND
RESIDENTIAL EXCHANGE RATES REQUIRED TO OFFSET THE
COST OF INTERCONNECTION AND SCC COMPETITION, 1974-1984

\$ Million	Year	Max. Est. Bus. Line & Res. Exch. Revenue	COMPETITIVE		NO COMPETITIVE	
			PRICE REDUCTION		PRICE REDUCTION	
			Minimum Annual Cost of I/C & SCC	Minimum % Increase Required	Minimum Annual Cost of I/C & SCC	Minimum % Increase Required
	1974	7525	100	1	60	1
	1975	8064	237	3	107	1
	1976	8643	398	5	174	2
	1977	9261	576	6	253	3
	1978	9926	778	8	357	4
	1979	10640	892	8	485	5
	1980	11404	1014	9	633	6
	1981	12224	1152	9	812	7
	1982	13103	1305	10	1019	8
	1983	14225	1476	10	1266	9
	1984	15249	1660	11	1548	10

TABLE 3
MINIMUM ESTIMATED INCREASE IN BUSINESS LINE RATES
REQUIRED TO OFFSET THE COST OF INTERCONNECTION AND
SCC COMPETITION, 1974-1984

\$ Million	Year	Maximum Estimated Business Line Revenue	COMPETITIVE PRICE REDUCTION		NO COMPETITIVE PRICE REDUCTION	
			Minimum Annual Cost of I/C & SCC	Minimum % Increase Required	Minimum Annual Cost of I/C & SCC	Minimum % Increase Required
	1974	2073	100	5	60	3
	1975	2248	237	11	107	5
	1976	2467	398	16	174	7
	1977	2676	576	22	253	9
	1978	2904	778	27	357	12
	1979	3149	892	28	485	15
	1980	3381	1014	30	635	19
	1981	3707	1152	31	812	22
	1982	4020	1305	32	1019	25
	1983	4416	1476	33	1266	29
	1984	4791	1660	35	1548	32

TABLE 4
MINIMUM ESTIMATED INCREASE IN RESIDENTIAL
EXCHANGE RATES REQUIRED TO OFFSET THE COST OF
INTERCONNECTION AND SCC COMPETITION, 1974-1984

\$ Million

Year	Maximum Estimated Res. Exch. Revenue	COMPETITIVE PRICE REDUCTION		NO COMPETITIVE PRICE REDUCTION	
		Minimum Annual Cost of I/C & SCC	Minimum % Increase Required	Minimum Annual Cost of I/C & SCC	Minimum % Increase Required
1974	5416	100	2	60	1
1975	5775	237	4	107	2
1976	6156	398	6	174	3
1977	6562	576	9	253	4
1978	7085	778	11	357	5
1979	7551	892	12	485	6
1980	8050	1014	13	633	8
1981	8581	1152	13	812	9
1982	9147	1305	14	1019	11
1983	9878	1476	15	1266	13
1984	10530	1660	16	1548	15

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to \$580 million annually for the Bell System Companies, and by 1984 the cost is estimated at a minimum of approximately \$120 million to \$170 million annually for the independents, compared to a minimum of approximately \$800 million to \$860 million annually for the Bell System subscribers. (See Table 5).

Overall averages, however, do not tell the complete story. Although each of the Bell System operating companies is large enough to provide a broad financial base with which to absorb the impact of interconnection and spread it as evenly as possible, many independent operating companies are not, and in a small independent, such as a one or two exchange company, the effect of its only large subscriber "going interconnect" can sharply increase the price of service for its remaining subscribers. Incidents of this type have already occurred and are expected to continue.

Moreover, there does not appear to be a direct correlation between the size of an operating company or the population size that it serves and the likelihood of interconnect penetration. Thus, interconnection may occur on a selective basis in any given area. In turn, because independent companies generally serve more rural and less densely populated areas of the country, interconnection may well have a significant adverse effect on the availability of basic telephone service at a reasonable price in these areas of the country.

At the present time, the Committee is unable to draw any firm conclusions as to whether the overall quality of telephone service has been significantly affected to date by interconnection, although

TABLE 5
COMPARATIVE ESTIMATED BELL SYSTEM AND
INDEPENDENT INTERCONNECT "COSTS", 1974-1984

\$ Million

Year	COMPETITIVE PRICE REDUCTION				NO COMPETITIVE PRICE REDUCTION			
	Minimum Annual Bell System Cost	Minimum Annual Independent Cost	Minimum Annual Industry Cost	Minimum Cumulative Industry Cost	Minimum Annual Bell System Cost	Minimum Annual Independent Cost	Minimum Annual Industry Cost	Minimum Cumulative Industry Cost
	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost
1974	61	31	92	92	44	8	52	52
1975	149	61	210	302	64	16	80	132
1976	246	92	338	640	90	24	114	246
1977	356	123	479	1119	124	32	156	402
1978	480	154	634	1753	173	40	213	615
1979	531	157	688	2441	226	55	281	896
1980	584	160	744	3185	294	69	363	1259
1981	645	163	808	3993	385	83	468	1727
1982	712	166	878	4871	494	98	592	2319
1983	786	169	955	5826	633	112	745	3064
1984	866	172	1038	6864	799	127	926	3990

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it is likely that absent diligent regulatory attention to this problem, a significant adverse effect would appear should interconnection become more prevalent. The level of interconnection at this time is relatively low, which necessarily limits any impact which it might have upon the quality of service, and most of the technical harms that may be occurring as a result thereof are not measurable as such by the telephone companies. Furthermore, it is clear that interconnected equipment has generally required proportionately more maintenance effort--rather than less, as would be expected--on the part of the telephone companies, and that this, in turn, translates into a higher cost of operation which cannot be fully charged back to interconnected customers. However, the exact reasons for the high trouble rate are not clear.

There is also no doubt that the present state of interconnection regulation does not prevent unfit equipment such as used telephone handsets to be widely disseminated to subscribers without the knowledge of the telephone company, typically with the result of illegal connection to the network and consequent degradation of service. Nevertheless, it also appears that interconnection permits subscribers to more readily obtain non-harmful equipment which they find useful or desirable. Under these circumstances, therefore, the Committee is not prepared to make an overall judgment on interconnection as it has affected the quality of telephone service to date.

The Committee further concludes that proper regulatory policy concerning interconnection requires a separate analysis of the issues associated with the various subgroups heretofore considered as one amalgam, with different regulatory treatment accorded each group. The Committee believes that there are three general class distinctions that should be made:

(1) The requirements of large, institutional users as users of the voice network;

(2) The requirements of data communication transmission, whether or not it takes place within the confines of a large institutional subscriber; and

(3) The requirements of individual users of the telephone network, whether or not such use takes place in the home or within the context of a small or large institutional framework.

Briefly, the equipment requirements for large institutional users, such as PBX's and key systems, have traditionally been provided by the telephone companies as an integral part of their service offering. The arguments in favor of interconnection generally do not apply to this class of equipment, and permitting interconnection will have significant adverse effects. Accordingly, the Committee believes that a substantial question exists as to whether permitting this type of interconnection is in the public interest.

The terminal equipment specifically utilized in the data communications market, however, clearly does not fall within the traditional concept of telephone service. The terminal equipment subject to competitive penetration, such as a modem,

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is only a minor part of the entire complex of computers and accessory equipment that must be employed to fulfill this type of communication need, and the utmost technical integrity of all such equipment must be maintained in order for the service to retain its value for the subscriber. At the same time, the exceedingly rapid technological turnover which has characterized the computer industry makes for an inherent conflict with sound utility practices. Accordingly, the Committee does not believe that the public interest would adversely be affected for the computer industry to provide substantially all of the terminal equipment used in providing this type of service, subject to the telephone company's needs to incorporate minimal protective features into the loop.^{18/}

The needs of subscribers for ancillary equipment to improve the value and utility of telephone service to them are diverse, and generally include equipment which the telephone company has little incentive to develop and market vigorously. Although this category includes such items as answering devices, automatic dialers, conferencing devices and call diverters, which primarily benefit the individual user rather than the large institutional subscriber as such, some relatively elaborate equipment such as a call re-

^{18/} The Committee does not believe that insurmountable technological differences exist between the telephone industry and the computer industry, and a cooperative attitude on the part of both sides should hasten resolution thereof.

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strictor, which only a larger subscriber can profitably employ, should also be included in this category.

No matter how extensive a product line a telephone company may offer, it is unlikely that it can completely satisfy the diverse desires of its subscribers for this type of equipment. In addition, adopting a pricing policy which results in revenue from this type of equipment subsidizing basic exchange service apparently also has the inadvertent effect, as a practical matter, of inhibiting the availability of such equipment by lawful means and of encouraging illegal direct interconnection. It makes little sense to the consumer, for example, if he is even aware of interconnect regulations, to "rent" an answering device from the telephone company for \$20.00 per month when he can buy the same type of equipment, if not the identical brand and model number, from a local department store and plug it into the network for a one-time charge of \$150. Even if it malfunctions and must be discarded in a year, the cost to him is less than he would have paid to the telephone company.

At the same time, widespread illegal interconnection of such devices already exists, and it is clear that substantial technical degradation of the network will be the inevitable result if they continue to be attached without any control being exercised over their technical performance, including network protective functions. Accordingly, the Committee believes that an appropriate compromise of the legitimate interests of the parties concerned may be the adoption of certification programs applicable specifically to this class of equipment.^{19/}

^{19/} However, the Committee takes no position at this time as to the precise format of such programs, other than to note that regulatory involvement should be minimized, with the industries working out their technical and procedural difficulties essentially between themselves.

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Much of the impact of the specialized common carriers is not quantifiable as such, but the effect on the average telephone subscribers, to whom this type of service is useless, is significant and is adverse. The Committee's estimate of the impact set forth above contains only the portion of the cost allocated to exchange service customers, and does not include approximately \$110 million annually the Committee estimates will be the cost for State toll users by 1980, with this cost increasing to approximately \$260 million annually by 1984. (See Table 6).

This cost is expected because the specialized carriers offering voice grade channels will siphon off the growth of the Subscriber Line Use (SLU) factor used for jurisdictional separations purposes, which in turn will result in assigning local plant costs to intrastate service which normally would have been assigned to interstate service. Such a result works an especial hardship on intrastate rates subject to State regulatory jurisdiction, since there is already a critically urgent need to allocate more, rather than less, local plant costs to interstate service. For these reasons, the Committee strongly believes that an expedited, comprehensive re-evaluation of current separations philosophy and procedures should be immediately undertaken, so that not only the adverse effects of these new policies can be avoided but that the necessary additional reforms can be accomplished.

Finally, it is apparent that those advocates of interconnection and specialized common carriers who believe that any adverse economic consequences could be adequately detected and corrected as

TABLE 6

COMPARATIVE ESTIMATED STATE TOLL AND
EXCHANGE SCC COMPETITION "COSTS", 1974-1984

Year	Total		Annual		Total		Annual		Total		Annual		Total		Annual		Total	
	Cost	State SCC	Cost	State SCC	Cost	State SCC	Cost	State SCC	Cost	State SCC	Cost	State SCC	Cost	State SCC	Cost	State SCC	Cost	State SCC
1974	12		12		8		8		8		4		4		4		4	
1975	39		51		27		27		35		12		16		12		16	
1976	85		136		60		60		95		25		41		25		41	
1977	139		275		97		97		192		42		83		42		83	
1978	206		481		144		144		336		62		145		62		145	
1979	291		772		204		204		540		87		232		87		232	
1980	386		1158		270		270		810		116		348		116		348	
1981	491		1649		344		344		1154		147		495		147		495	
1982	610		2259		427		427		1581		183		678		183		678	
1983	744		3003		521		521		2102		223		901		223		901	
1984	888		3891		622		622		2724		266		1167		266		1167	

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they appeared, substantially misconceive the nature of the impact at issue. In fact, the primary issue as to economic impact is not whether existing telephone companies will suffer a net reduction in operating revenues over present levels as a result of competitive penetration. Rather, it is clear that the primary impact relates to the manner in which costs of operation are shifted from one class of user to another, whether as a natural consequence of competitive penetration or as a consequence of the competitive strategies adopted by the telephone companies.

It is further clear that the inherent vice of permitting a mixture of regulation and unregulated competition is that the adverse impact on subscribers of the monopoly service occurs subtly and cannot be detected from information normally furnished to the regulatory agencies by utilities in the ordinary course of business. Accordingly, continued refusal to acknowledge the very real and substantial economic threat of interconnection and specialized common carriers only ensures that the threat itself will become an accomplished harm. What is needed now is an affirmative regulatory strategy for mitigating or avoiding such harm entirely.

IV. DISCUSSION AND CONCLUSIONS

Interconnection

Economic Impact

The first issue in determining whether there is likely to be an adverse economic impact from interconnection is resolution of the question whether current tariff policies relating to vertical services in fact result in a "subsidy" of basic exchange service. That such

a subsidy in fact does exist is amply demonstrated in the record, and is derived from two sources:

(1) The pricing of vertical services at a level above "relevant cost" 20/, so that a contribution is made by vertical service revenue toward meeting overhead and common costs of operation, and

(2) Establishment of price levels above unseparated costs, so that the revenue derived therefrom is credited to the exchange level, but a portion of the cost associated therewith are in fact assigned to toll services. 21/ In effect, therefore, the subscriber pays for this portion of the cost in two ways--at the exchange level and also through use of the toll network. To the extent that the revenues received at the exchange level cover costs that in fact are assigned to other services, this constitutes a direct subsidy of local exchange operations.

20/ Relevant costs as used in the record and in this report are long run incremental or prospective costs that are related to a particular category of service, including a factor for return on investment.

21/ In the case of the Bell System, with the exception of California, such costs are specifically assigned to toll service only at the interstate level pursuant to the "Ozark Plan" of jurisdictional separation now in effect. However, since independent companies also use the Ozark Plan for division of intrastate toll revenue, a portion of their annual costs associated with vertical services is also assigned to State toll, resulting in a greater proportion of such costs being directly assigned to toll for the independents than for the Bell System.

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The extent of the total annual subsidy of exchange operations by vertical services is substantial, of which subsidies by PBX systems and the key systems are clearly the most significant. At 1973 levels, Pacific Northwest Bell estimated that out of total PBX system revenues of \$15,263,000, contributions to overhead and common costs amounted to \$3,917,000 (about 26 percent). Similarly, key systems were estimated to have contributed \$11,684,000 toward overhead and common costs out of total key system revenues of \$39,341,000 (about 30 percent).

For comparative purposes, reference to Statistics of Communications Common Carriers published by the FCC indicates that overhead and common costs for all Bell operating companies average about 21 to 22 percent of total operating revenues.^{22/}

The United System also provided a detailed breakdown of its revenues and costs associated with PBX and key systems, which further establishes the magnitude of the basic exchange service subsidy resulting from vertical service revenues. This breakdown shows that on a composite basis at 1973 levels, large PBX systems contributed

^{22/} In the Committee's judgment it is not necessary to determine whether 1973 contribution levels constitute "fully allocated" costs, since it is apparent that any price reduction will shift such costs to other ratepayers. Similarly, if price levels are maintained at a high level, resulting in significant interconnect penetration, these revenues will be lost to the telephone companies and the overhead and common costs would be shifted to other ratepayers.

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an estimated 26 percent of total revenues toward overhead and common costs, small PBX systems contributed approximately 42 percent and key systems contributed approximately 49 percent. Again, for comparative purposes only, reference to Statistics of Communications Common Carriers indicates that overhead and common costs for the entire independent industry average about 17 to 18 percent of total operating revenues.

With regard to the second source of subsidy, namely, jurisdictional separations and toll settlements, Pacific Northwest Bell estimated that at 1973 levels a total of \$2,961,000 of annual PBX costs were allocated to interstate toll through the process of separations, out of total unseparated costs of \$11,346,000, an interstate allocation of 26 percent. With regard to key systems, PNB estimated that \$4,886,000 out of total unseparated costs of \$27,657,000 was allocated to interstate toll, an allocation of about 18 percent.

Insofar as the independents are concerned, on the other hand, General has determined that approximately 17 percent of its station apparatus and large PBX investment and associated expenses are allocated to interstate toll at current levels, and that approximately 21 percent of such expenses are allocated to intrastate toll, making a total toll "subsidy" of exchange service of 38 percent.

Applying these figures to the industry as a whole, the Committee estimates the total subsidy of exchange operations for the Bell System from PBX systems during 1973 was approximately \$481 million,

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and from key systems, approximately \$478 million. For the independent industry, the Committee estimates that the total subsidy of exchange service at 1973 levels resulting from PBX systems was approximately \$140 million, and from key systems, approximately \$98 million. Measured per residential customer, this constitutes approximately \$18 per year or approximately \$1.50 per month.^{23/} There can be no doubt, therefore, that reduction or diversion of this support as a result of competitive penetration would have serious economic consequences for non-interconnected exchange service subscribers.

Attempting to measure any adverse effect which interconnection has had or may have in the future is, of course, a very difficult process. In its simplest form, the Committee has been provided with actual case histories where small telephone operating companies have seen their few large subscribers "go interconnect", resulting in increased costs being borne by the remaining subscribers. In one case, involving a single exchange company serving approximately 485 customers, its only large customer recently replaced the PBX system furnished by the company with its own equipment. The net annual revenue loss to the company in this case was \$5,000 and the only cost savings that could be achieved was a reduction in depreciation expense of \$700 per year. This loss amounts to \$8.88 annually per basic exchange customer, exclusive of additional losses due to toll settlements, or 16 percent of the company's basic exchange rate on a monthly basis. The company anticipates seeking an increase in its basic exchange rate to offset this loss in the near future.

^{23/} Figures submitted by South Central Bell estimated the contribution subsidy from PBX, key systems and extensions at about \$33 million annually, with interstate terminal equipment cost allocations totalling approximately \$38 million annually. This amounts to a combined subsidy of approximately \$1.60 per month measured on a per residential customer basis.

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In another case involving a single exchange operating company which is part of an independent system, three of the company's 11 customers utilizing PBX's replaced their carrier-provided systems with interconnected units. This resulted in an annual revenue deficiency of \$72,760, including toll settlement effects, which must be recovered from the 2,400 local rate payers in that exchange. On an annual per local exchange customer basis, this amounts to \$30.32 or an increase of \$2.53 per month in the local exchange rate.

In a third case, the only large business customer of a small single exchange company is seriously considering replacing its carrier-provided PBX with an interconnected unit. Although at the time of the hearing the issue had not been resolved in favor of interconnection, should this happen the company will sustain an annual net operating loss of \$6,300, exclusive of toll settlement losses. Thus, its 12,075 other customers would be required to pay an additional \$5.00 per year to offset this loss, which translates into a 7 percent increase in basic exchange rates. Should the sale go through, the company will definitely seek a rate increase to offset this loss.

These are illustrations of what is happening now and what will continue to happen in the future with interconnection. On a more generalized basis, Central Telephone Company has incurred annual revenue losses in excess of \$480,000 a year since 1971 due to interconnection. General reported revenue losses in excess of \$4 million since 1970, and Pacific Northwest Bell reported revenue losses in excess of \$1,200,000, with associated "subsidy" losses estimated at \$543,000. In fact, however, the revenue loss

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associated with an interconnect unit does not occur merely on an annual basis, but occurs over the entire station life of the equipment. Thus, for example, assuming an average station life of ten years for the interconnected units in Central's franchise area, the entire loss is not \$480,000, but rather becomes \$4,800,000.

While these statistics demonstrate what has happened and what is happening as a result of interconnection, proponents of interconnection have pointed to the historical growth of telephone company operations and revenue as evidence that the overall impact of interconnection on telephone subscribers will be minimal or nonexistent. For this reason, the Committee desired in this investigation to measure the impact which interconnection may be expected to have over the next decade, including growth factors as part of the equation.

No statistical projections of the anticipated impact of interconnection was provided by the participants of the investigation, although the United System submitted a forecast of units in service, revenues and expenses for PBX's and key systems through 1988, assuming that interconnection remained at a minimal level. In addition, the president of Communication Certification Laboratory expressed his judgment that interconnection would capture the entire station equipment market within 20 years, with the possible exception of large PBX's. However, no statistical analysis was submitted to support his conclusion, and the attitude of the telephone companies at the hearing indicates that they are prepared to act vigorously to prevent such a result.

Accordingly, the Committee has made its own projection of the impact of interconnection on an industrywide, nationwide

basis over the next decade. A projection of this type, of course, necessarily involves a number of judgments and assumptions about uncertain, future events, and the Committee has attempted to be as conservative and realistic in framing its projections as reasonably possible.

Basically, what was done was to isolate the "subsidy" portion of revenue associated with PBX and key systems at 1973 levels, and to project this subsidy to 1984 on the basis of price changes and penetration levels that may be expected to occur. The "cost" of interconnection, therefore, was measured as the difference between the subsidy which would have occurred had there been no interconnection (i.e., contribution to overhead and common costs plus toll cost allocations) and the subsidy level which may be expected under interconnection.

To establish the range of impacts, the Committee employed two basic assumptions:

- (1) Price levels are maintained and increased on a normal basis, as though interconnection did not exist; and
- (2) Price levels are gradually reduced over a five year period to achieve an average contribution level of 15-20 percent, resulting in the telephone companies retaining currently existing market shares.

These were deemed to be the two extremes of the telephone companies' possible competitive responses, with the actual result falling somewhere in between the extremes. In turn, the minimum impact was estimated under each of these two assumptions and used as the Committee's estimate as set forth above in Section III.

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Costs for the Bell System were estimated to remain at their relative 1973 level, in order to be as conservative as possible.^{24/} First, relative changes in expense levels due to interconnection are extremely difficult to quantify with any reasonable degree of certainty. The testimony indicates that the cost of capital and depreciation rates associated with PBX and key systems are expected to increase as a result of interconnection, but the Committee has not attempted to quantify the effect such increases might have. However, to the extent this occurs, it would have the effect of further reducing subsidy levels and increasing the cost of interconnection beyond that shown in the Committee's projection.

Second, the Committee's estimate assumes continuing growth in PBX and key system revenues during the forecast period, and therefore costs directly associated with interconnected units are assumed to be entirely avoidable. Thus, for example, carrier-provided key systems that are replaced by interconnected units are assumed to be immediately reusable at another location. To the extent that the revenue losses and cost avoidances do not occur in phase with each other, therefore, projected subsidy levels would be reduced and the cost of interconnection increased beyond that shown in the Committee's projection.

A detailed explanation of the derivation of the Committee's

^{24/} Estimates for the independent industry are based upon the projection provided by the United System, which includes projected cost levels. However, relative cost levels were not expected to increase substantially in this projection during the time frame utilized.

projection is set forth in Appendix C hereto.

One of the most disturbing features that becomes immediately apparent as a result of the Committee's analysis is the inherent conflict raised by the competitive threat of interconnection between the telephone company's proper role as a profit-seeking entity and its service obligation to the public. As a profit-oriented organization, the most rational response for it to make to interconnection would be to lower its prices in order to retain its existing market share, thereby maximizing annual revenues and investment base. Yet this is precisely the competitive strategy which results in the most loss of subsidy for exchange services over the next decade and which results in non-interconnected subscribers having to bear the greatest economic burden.

To illustrate the conflict presented, the estimates made by the Committee demonstrate that if the Bell System lowered its PBX and KTS prices to retain its existing market share, its annual revenues from such equipment by 1980 would be at least \$200 million greater than it would earn by retaining existing price levels and permitting competitive penetration. Moreover, from the telephone company's point of view, since lowering its prices would permit it to retain more units in service, its investment base would be maximized if it were to lower its prices as a competitive strategy, thereby enabling it to earn a greater return for its stockholders.

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However, the effects of such a competitive decision on the general body of ratepayers is just the reverse. If the Bell System lowers prices in order to compete, the minimum cost to the ratepayers in the form of lost subsidy is estimated by the Committee to be approximately \$2.4 billion on a cumulative basis by 1980, compared with an estimated maximum cumulative subsidy loss of \$1.3 billion by 1980 if price levels are maintained. No doubt, in the long run, subsidy levels would be maximized by lowering prices to retain current market shares, but in the immediate future such an approach would cost consumers millions of additional dollars.^{25/}

Questions have been publicly raised as to the appropriateness of the cross-subsidization of basic exchange service by vertical services in the manner shown above. Regardless of the merits or demerits of the arguments on this issue, the critical fact is that since the station equipment market has been opened to competition, the State regulators are forced into an extremely difficult dilemma in determining the appropriate regulatory policies to apply to the competitive environment. On the one hand, if the regulators permit telephone companies to engage in vigorous price competition, immediate and substantial rate increases for other than vertical services will be required. On the other hand,

^{25/} For comparative purposes, the Committee estimates that lowering prices would cost the consumer in terms of lost subsidy a minimum of \$5.4 billion by 1984 (Bell System only), whereas a maximum of \$4.4 billion in lost subsidy would be incurred by that time if prices were not lowered.

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if the regulators require telephone companies to maintain artificially high price levels, developed for social reasons under monopoly conditions, in order to minimize the immediate impact of interconnection, not only would the telephone companies be denied an equal opportunity to compete, but the long term consequences to the public in terms of ultimate subsidy losses and declining financial health of the industry would be compounded.

With respect to the relative impacts of interconnection on the independent industry, as compared to the Bell System, it is undisputed that the independent companies as a class generally serve the smaller metropolitan areas, suburban areas and rural areas, and that, generally speaking, relatively fewer large business customers are located in their franchise areas. The relatively lesser amount of business customers is borne out by the fact that, with the exception of General Telephone, vertical services generate about 50 to 75 percent of the relative level of local service revenues for the independents submitting information to the Committee compared to the Bell System. ^{26/}

The conclusion drawn by many from the foregoing information is that interconnection will have relatively lesser impact on the independents than on the Bell System. However, the Committee believes that such a conclusion is erroneous, and that either

^{26/} To the extent that information was submitted to the Committee, General's vertical service profile appeared to be very similar to that of the Bell System.

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there will be no significant difference in impact as between the Bell System and the independents, or that the independents will experience a relatively greater loss than will the Bell System.

First, although the relative revenue importance of vertical services is less for the independents, on the average, than for the Bell System, the record indicates that the subsidy factor for the independent vertical services is significantly greater than for the Bell System. The cost and revenue breakdown provided by United shows that, at 1973 levels, large PBX's contributed approximately 26 percent of total revenues to overhead and common costs, small PBX's contributed approximately 42 percent of total revenues and key systems contributed approximately 49 percent of total revenues. The PBX revenues of Pacific Northwest Bell (both large and small), by comparison, contributed an average of approximately 26 percent of total revenues to overhead and common costs, and key systems contributed approximately 30 percent of total revenues. In addition, reference to Statistics of Communication Common Carriers indicates that overhead and common costs constitute a relatively lower percentage of operating revenue for the independent industry than for the Bell System operating companies, which further increases the significance of independent vertical services as a source of subsidy revenue.

Furthermore, independents directly assign portions of their vertical service annual costs to both intrastate and interstate toll under the Ozark Plan, whereas the Bell System, with rare exception, directly assigns a portion of such costs only to interstate toll and not to intrastate toll. The record indicates that the independents presently assign approximately 38 percent of their vertical services costs directly to toll service, and that the Bell

System directly assigns approximately 19 percent to toll. Thus, under these circumstances, the conclusion is clearly warranted that the vertical service revenue is at least equally as significant as a source of exchange service subsidy for the independent industry as for the Bell System.

Second, it is clear that serving generally the smaller metropolitan and rural areas of the country does not immunize the independent from interconnect competition. The witness for General testified that his company's experience has been that interconnection varies as a function of business density rather than population size, and the case histories of the single exchange companies discussed above demonstrate that even the smallest companies with only one or two large business subscribers can feel the effects of interconnection at any time.

In addition, Central Telephone Company reported that one of its most intense competitive encounters with interconnection has been occurring in a company serving a total population of fewer than 50,000.

The size of the Bell operating companies, which dwarfs even the largest independent operating company by comparison, gives them a broad financial base with which to absorb and overcome the effects of competitive penetration. In contrast, the size of the independent operating companies, which may range to as little as a single exchange company serving no more than 400 or 500 subscribers, means that the impact of interconnection, occurring on a selective basis and at times and places of its own choosing, may well be disastrous.

As an illustration, the witness for Mid-Continent Telephone Corporation pointed to its single exchange operating company in Kershaw, South Carolina, which has only three PBX systems in its franchise area. The witness estimated that if those systems were replaced by interconnected units, the company would be forced into a rate case seeking rates for one party service on the order of \$15.00 to \$20.00 per month. Whether quality service could continue to be maintained under such circumstances is problematical, as is the number of local subscribers who could afford to retain their service at such rates.

For all of the foregoing reasons, therefore, the Committee concludes that the effect of interconnection is likely to be equally as significant, if not more significant, for the independent industry as for the Bell System, and further, that interconnection may significantly impair the availability of service at reasonable prices in the less developed or rural areas of the country.

Quality of Service Impact

The overall impact of interconnection on the quality of telephone service to date is difficult to determine, and its probable impact for the future is highly contingent upon the direction of future regulatory policy. It is clear that customer-provided terminal equipment presently requires greater maintenance efforts on the part of telephone companies than their own equipment, which is of particular significance because it should be reasonably expected that customer-provided

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equipment would require relatively less maintenance effort. Nevertheless, the primary reason for this situation and whether it may be a transitory phenomenon is not known, which tends to limit the validity of conclusions that might otherwise be drawn. By the same token, however, many of the possible adverse technical effects of interconnection are not quantifiable by the telephone companies, which also makes an overall conclusion on the effect of interconnection more difficult.

Several of the companies testified as to examples of the types of problems regarding quality of service that they face as a result of interconnection, but relatively little systemwide analysis has been conducted to determine its impact on quality of service on a generalized basis.

There is evidence that improperly designed equipment is being interconnected to a certain extent. As examples, the witness for Central Telephone Company cited an automatic dialing device which causes improper signal levels and wave forms, an anti-crime device which continues to hold up the line falsely for 14 to 17 minutes after notifying police that some problem has occurred, thus disabling that line and precluding incoming and outgoing traffic for the interim until the line is released, and an automatic answering device which fails to release the line to which it is connected, thus disabling that line. These devices render a telephone line inoperative and have caused numerous "false busy" trouble reports, as well as numerous identification failures on direct distance dial calls in central offices that require special spotter type dials for identification purposes. Other witnesses reported similar experiences.

The major problem, however, appears to be the operational difficulties presented by the divided responsibility for network performance inherent in permitted interconnected equipment, which increases the relative maintenance costs of operation for the telephone company in ways not always chargeable to the interconnected subscriber. To date it appears that interconnected subscribers frequently call the telephone company first whenever they become aware of some difficulty in their service, which requires the company to perform test desk work at the central office in an attempt to determine whether the trouble is in their own equipment or in the customers' equipment. Even when such tests indicate that the trouble lies in the customers' terminal equipment, it is not uncommon for the telephone company to run its tests several extra times in order to be absolutely sure that the trouble is not with its equipment before telling its subscriber to contact the interconnect representative. Such extra testing, of course, results in increased maintenance costs for the telephone company which are directly related to interconnection.

In many cases, but not always, it is necessary for the telephone company to dispatch a repairman to the station equipment location in order to perform all tests necessary to determine that the trouble is not in the carrier-provided equipment. In such situations, a charge for the maintenance visit is billed to the interconnected customer which could include an amount for test desk work. However, since a visit is not required in every case, a significant portion of the additional maintenance costs associated with interconnected customers are not

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recoverable directly from such customers and must be borne by the general body of ratepayers. Additional analysis and tariff revisions may correct this problem in the future, but at the present time telephone companies are not fully compensated for their maintenance efforts resulting from interconnected equipment.

However, even after the subscriber is convinced by the telephone company that the difficulty is the responsibility of the interconnect representative, a dispute may arise between the interconnect company and the telephone company as to whose equipment is at fault. This is particularly troublesome from a regulatory point of view, because where a problem is unusually difficult to isolate, the strained relationship between the telephone industry and the interconnect industry makes it likely that each will impute bad faith in the diagnosis to the other. In the meantime, the problem goes uncorrected and service continues to be degraded while the two industries wrangle with each other as to who is at fault.

An additional source of difficulty for the telephone company occurs when a third party trouble report results in isolating a problem in a piece of customer-provided equipment. Third party reports are reports made to the telephone company of difficulties being experienced by someone using the network other than the owner or primary user of the customer-provided equipment. When a repairman is dispatched to try to locate and clear the trouble, the interconnected subscriber may contend that he did not report the trouble and should not be required to pay a maintenance charge-- even in situations where trouble is shown to be in the customer-

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provided terminal equipment itself. Rather than incur the wrath of the subscriber the telephone company may write off the cost of that visit, with the result that the expense thereof is borne by the general body of ratepayers. In this situation, also, it appears that the problem frequently results from illegally interconnected terminal equipment which the customer was innocently misled into thinking could be directly connected to the network.

While the Committee is sympathetic to the plight of the consumer who is misled as to the terms and conditions under which interconnection may be carried out, neither does it appear equitable to require the general body of ratepayers to bear the expense of such errors. Nevertheless, the dilemma posed for the telephone company is clear, and this type of problem is likely to continue and increase, at least in the near future.

Although the foregoing is illustrative of the types of problems encountered by the telephone companies in dealing with customer-provided terminal equipment, relatively little data is thus far available from which to determine the generalized impact of such problems on the overall quality of service. In part, this is due to the relatively limited historical experience of the industry with interconnection, and the consequently limited time available for making meaningful statistical studies of the issue. In part, this is also attributable to the fact that many of the types of harms that might be anticipated with interconnection are difficult or impossible for the telephone companies to isolate as resulting from interconnection, measure and quantify on a

generalized basis.

In one study made by the Bell System concerning customer-provided data sets, 8.5 percent of the customer-provided equipment emitted signal levels in excess of the minimum protective criteria set forth in Bell's tariffs, compared to 2.4 percent of the Bell-provided data sets. According to a Bell witness, the study was designed and conducted by professional statisticians so that the results thereof could be applied to the Bell System as a whole, and in the statisticians' judgment, the differential is statistically significant. According to the witness, results of such tariff violations have ranged from noisy connections for other customers to complete failure of a carrier system carrying hundreds of conversations.

As the Committee understands the situation, increased signal levels in data sets may have the effect of reducing the error rate, which may provide an incentive, not necessarily present in the case of other types of customer-provided equipment, for competitor manufacturers to violate standardized technical criteria. At the same time, of course, the fact that tariff criteria have been violated does not of itself prove that the criteria are reasonable. Nevertheless, in the Committee's judgment the study may be taken as at least a partial measure of the compliance rate which may be expected for customer-provided equipment if technical standards are promulgated for general classes of equipment. In turn, such results support an inference that the quality of telephone service would be degraded to a certain extent as a result of interconnection.

In addition, a study conducted by the Bell System during the full year 1973 on intercity private line services not terminating in common control switching arrangements, including full period voice and data circuits, revealed that the customer trouble report rate for circuits terminating in customer-provided equipment was about 70 percent higher than for similar circuits terminating in telephone company provided equipment. Comparable results were found for both voice and data circuits, and each class of intercity private line voice circuits terminating in customer-provided equipment showed a higher customer report rate than circuits terminating in telephone company provided equipment. According to the Bell witness, carrier-provided connecting arrangements could not have been the cause of the differing rate.

In another study involving the switched network, a random sample of over 9,000 exchange service lines involving customer-provided equipment during a three month period in 1973 showed that these lines experienced a trouble report rate about 30 percent higher than comparable lines involving only telephone company provided equipment. The lines studied represented four major classes of service, i.e., residence, business, PBX, and centrex, and the Bell witness testified that the trouble associated with connecting arrangements could not significantly alter the results.

Again, of course, a trouble report rate does not necessarily prove by itself that the quality of service is being degraded by the customer-provided equipment. Moreover, although one of the

studies covered a full year, it is not clear that this situation is a permanent rather than a transitory characteristic, and no relative evaluation has thus far been made to determine whether certain types or classifications of customer-provided equipment are the primary source of the difficulty.

However, in the Committee's judgment the studies do indicate the relative difficulty and increased cost of maintenance for the telephone company caused by the interconnection of subscriber-provided terminal equipment, resulting at the least in increased expenses which are borne by the general body of ratepayers. This is particularly significant when it is remembered that one of the arguments in favor of interconnection has been that the telephone companies would incur fewer maintenance costs, thereby benefiting the general body of ratepayers, due to customers providing their own maintenance. Thus, one would logically expect that the trouble report rate on customer-provided equipment would be lower than for carrier provided equipment, rather than the reverse situation indicated by the data to date.

The only study furnished to the Committee analyzing the types of trouble associated with terminal equipment was provided by Pacific Northwest Bell and concerned only customer-provided equipment. The witness testified that the study was not designed by professional statisticians, but he believed the results to be accurately descriptive of the situation in PNB's operating territory. The study was conducted during 1973 and the early part of 1974, and involved a total of 1,528 cases of trouble related to customer-provided equipment.

Of the 1,528 cases studied, a total of 1,322 (87 percent) involved repair incidents, of which 109 (8 percent) were cases where testing was performed at the central office and the report was referred to the customers by telephone as trouble in their equipment. The remaining 92 percent (1,213 cases) were incidents where a PNB service personnel was dispatched to the customers' premise to identify the source of the trouble. Of the cases where a repair person was dispatched to the customer's premise, the trouble was identified with authorized customer-provided equipment in 647 cases (53 percent) and with unauthorized customer-provided equipment connected to the network in 566 cases (47 percent).

The types of unauthorized equipment found included telephone sets (178 cases, 31 percent); wiring and jacks (158 cases, 28 percent); cords (81 cases, 14 percent); recorders and answering sets (106 cases, 19 percent); and speakers, conferencers and automatic dialers (43 cases, 8 percent). In turn, of the cases where equipment was connected in an unauthorized manner, a total of 471 (83 percent) could have caused an adverse quality of service impact on other telephone users. Specifically, the troubles included:

- (1) Cannot call--no dial tone (193 cases, 34 percent);
- (2) Cannot be called (152 cases, 27 percent);
- (3) Cannot hear--noise (70 cases, 12 percent);
- (4) Billing errors (26 cases, 5 percent); and
- (5) Other (125 cases, 22 percent).

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It is clear from the above and from other testimony in the record that the illegal interconnection of subscriber-provided equipment is a serious problem today--both in terms of its widespread nature and in terms of its adverse impact upon the quality of telephone service. Logically, it appears that widespread illegal interconnection could substantially account for the unexpectedly high trouble report rate experienced on customer-provided equipment, but no study has been made that the Committee is aware of testing this hypothesis.

One of the unfortunate by-products of current interconnection regulation is that both quality and inferior equipment alike can be and is being disseminated directly to the consumer, frequently without any information as to interconnection restrictions, and completely beyond the knowledge or control of the telephone company. At its worst extreme is the example in this record where "surplus" telephones in sadly dilapidated condition were publicly advertised and sold for the "bargain" price of \$.50 each. Clearly, since it is lawful for a person to advertise and sell terminal equipment directly to the consumer, it is practically impossible at the present time to prevent deteriorated equipment of this sort from being connected to the network.

Nevertheless, it is also clear that a substantial portion of the market for customer-provided terminal equipment relates to items which improve the utility and performance of the network to subscribers, in ways not inherently harmful to the network, and that in many cases the telephone company, for one reason or another, has little or no incentive to aggressively market this type of

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equipment to its subscribers. To the extent that non-harmful equipment of this type is more widely available to subscribers as a result of interconnection, the "quality" of telephone service for such subscribers may be improved in ways which tend to offset the adverse effects thereof. Accordingly, although it is clear that the interconnection of subscriber-provided equipment has had adverse effects to date on the quality of telephone service, the Committee is not prepared to reach an ultimate conclusion on this record as to the overall extent of such effects, and as to whether, on balance, the various effects may offset each other.

Specialized Common Carriers

The economic impact of specialized common carriers on the general body of telephone service subscribers is perhaps more easily conceptualized and less easily quantified than in the case of the interconnection of subscriber-provided terminal equipment. However, the threat itself is no less real.

The long distance communications transmission market, generally operating in interstate commerce under the jurisdiction of the FCC, has been characterized in recent years by declining unit costs resulting from technological innovations in transmission methods. For example, the greatest number of long-haul carrier systems in use today utilize microwave radio systems, which as of December 31, 1972, accounted for about 69 percent of the total 368 million circuit miles of long distance carrier facilities in the Bell System. Capabilities on microwave radio systems range up to more than 22,000 voice grade circuits in a single route with as many as 1,800 such

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circuits sharing a common radio channel.

As a result of technological developments such as microwave, the average investment per circuit mile for interstate facilities provided by AT&T's Long Lines Department has declined from about \$59 in 1950 to around \$18 in 1972. These cost efficiencies have been available to offset cost increases to such an extent that interstate rates are 25 percent less overall today than they were in 1940.

This, in turn, has stimulated rapid growth in these markets, thereby supporting the development of additional innovations and the introduction of such innovations into service.

The three primary long distance service offerings which have benefited from these innovations are Message Toll Telephone Service (MTS), Wide Area Telephone Service (WATS), and Private Line Service (PLS). MTS is ordinary long distance service in which the subscriber is charged for each message completed as a function of the distance and duration of the call. WATS offers the subscriber access to all telephones connected to the switched network in a given geographical area for essentially a flat charge per month, and PLS is a service whereby specific telephones are connected by "leased" or "dedicated" circuits on a continuous basis for a flat charge per month.

As can be seen, the primary determining factor to a subscriber in his choice of which long distance service to utilize is the relative price he must pay rather than technical considerations, and by the same token, the telephone company plant needed to provide these services is substantially fungible among the three types of service. By consolidating the demand for MTS,

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WATS and PLS, therefore, AT&T has been able over the years to add higher capacity, lower unit cost facilities to its plant in service than would have been possible had a separate network been built for each type of service alone. This, in turn, has made it possible for both the individual MTS user and the large PLS user to realize the benefits of economies of scale in the form of lower rates than otherwise would have been possible.

Although the specialized common carriers have been permitted to date to compete only in the PLS market, it is clear that to the extent that PLS traffic is diverted from the existing network, overall long distance traffic growth will be slowed and the introduction of lower unit cost facilities for individual telephone service subscribers will be retarded.

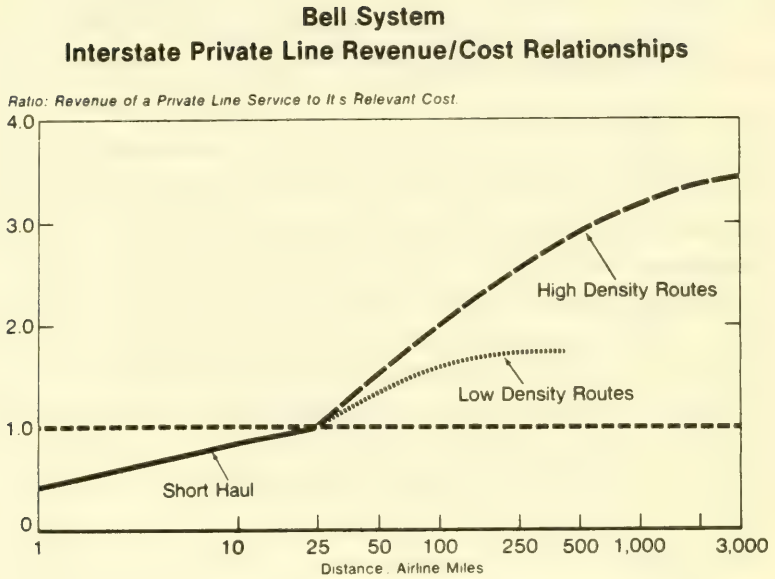
As a highly simplified illustration, a TD2-TDI radio facility with a capacity of 6,000 voice channels costs the Bell System approximately \$24,585 per route mile to build at capacity, resulting in an average cost per circuit mile at capacity of \$4.10. By contrast, a TH3 radio facility has a voice channel capacity of 12,600 and costs approximately \$34,204 per route mile at capacity to build, resulting in an average cost per circuit mile at capacity of \$2.71. If the specialized common carriers diverted sufficient traffic such that adding only a 6,000 channel facility for MTS and WATS users along a 1,000 mile corridor were justified, rather than a 12,600 channel facility for PLS traffic as well as MTS and WATS, it would cost the Bell System an additional \$1.39 per circuit mile to construct the 6,000 channel facility, or about \$8.3 million additionally in all. The additional cost, of course, is due to the fact that the 6,000 channel facility could not be incorporated as part of a larger

system. In turn, however, the \$8.3 million additional investment required in this situation would translate into approximately \$1.3 million in increased revenue requirements which the MTS and WATS subscribers would have to pay. Over a 40 year period, therefore, the subscribers would pay on the order of \$30 million in the form of increased rates (including an allowance for depreciation) as a direct result of the duplication of carrier transmission facilities and the inability of AT&T to achieve economies of scale.

Another cost of specialized common carrier competition is in the proportion of overhead and common costs which users of MTS must pay in their rates. Obviously, the ordinary individual user is confined to MTS for long distance calling purposes, and has little use for the volume discounts available in WATS and PLS. However, the extent to which WATS and PLS continue to grow and return income to AT&T above their relevant costs is of direct concern to him, since it reduces the amount of overhead and common costs which he must pay in his MTS rates.

At the present time, Bell System private line services are priced to return a substantial contribution over relevant costs, primarily in the longer haul markets of 250-3,000 miles. A graphic depiction of the interstate revenue/cost relationships is set forth below in Figure 4. As can be seen, the revenue derived in the long haul, high density routes--which is where the primary competitive thrust of the specialized common carriers is expected based upon their applications to the FCC--contains relatively the greatest amount of contribution above

FIGURE 4



Source: Bell System Exhibit 2, Attachment H

relevant costs, and is therefore considered to be the most vulnerable to competitive diversion, absent repricing by the Bell System. Included in such loss, of course, would be a loss of contribution to overhead and common costs, which in turn would tend to shift such costs from PLS to individual MTS users.^{27/}

The foregoing types of losses theoretically would be borne in form of higher interstate rates subject to FCC jurisdiction.^{28/} Nevertheless, in the Committee's judgment the impact of the specialized common carriers will not be confined to the interstate ratepayer, but will also appear in the form of increased costs for the intrastate telephone user.

First, it is clear that specialized common carrier competition affects not only interstate private line service, but also results in diverting traffic from the toll network, thereby resulting in an increased allocation of costs, through separations procedures, to the intrastate jurisdictions.

^{27/} The Committee recognizes that leasing local distribution facilities to the specialized common carriers would be an additional source of revenue tending to offset contribution losses. However, the extent to which such revenue sources will occur is not clear, since some SCC's apparently plan to provide their own facilities, and a Bell witness testified that he expects this revenue effect to be relatively insignificant.

^{28/} To the extent that SCC competition is permitted on intrastate PLS routes, the diversion of revenue from existing carriers resulting from competitive penetration would also have the effect of reducing the contribution of intrastate PLS to intrastate overhead and common costs, thereby shifting such costs to other intrastate ratepayers. However, insufficient information is available to the Committee at this time for it to estimate the impact of such losses.

A major assumption made when the specialized common carriers were permitted free entry into the market was that only private line services would be affected, a relatively smaller source of interstate revenue than either MTS or WATS. However, the Bell System experience to date indicates that when SCC routes are put in service, the lower price threshold for leased circuits results in traffic being diverted from MTS and WATS to private line service. Bell System analysis of its experience along the first SCC route, that of MCI between Chicago and St. Louis, shows that of the circuits gained by MCI, about 65 percent came from existing telephone industry private lines that were replaced by SCC service; about 20 percent came from the shift of existing MTS to the lower price threshold of the SCC private line; and about 15 percent came from customers who subscribed to additional private lines and also shifted traffic from MTS because of price stimulation.

In turn, for customers who previously had Bell private line service, not only was there a Bell System loss of private line revenue due to cancellations, but compared to their previous pattern of calling between Chicago and St. Louis, nine months after taking the SCC service their MTS usage had decreased by eight percent, measured on a revenue basis. For customers who did not previously have private line service but shifted existing MTS to the new low priced SCC private line service, their MTS usage dropped by 42 percent on a revenue basis. As an aggregate, Bell's MTS revenue loss for this group averaged 25 percent nine months after the customer subscribed to SCC service.

More recent data indicates that the trend is continuing, if not increasing. Of the customers who diverted their private line service

from Bell to MCI, the MTS reduction increased from eight percent at nine months to 12 percent at 12 months and 15 percent at 15 months. Of the customers who did not have private line service before and were only using MTS, the MTS reduction at 12 months and 15 months was 41 percent, compared to 42 percent at nine months, with a composite reduction of 26 percent at 12 months and 27 percent at 15 months for the group. Admittedly, the scope of this data is limited, but in view of the effect which price levels have on the relative demand for MTS, WATS and PLS, there is no doubt in the Committee's judgment that this phenomenon will be repeated each time an SCC voice grade route is introduced into service.^{29/}

Furthermore, the traffic diversion from the toll network to PLS is likely to be substantially increased as a result of the Bell System competitive repricing of PLS. Basically, Bell has filed a tariff with the FCC proposing to substantially increase PLS rates on routes which the specialized common carriers are not proposing to service, and to substantially reduce rates on the high density routes vulnerable to SCC competition. Although this strategy may have the effect of minimizing overall Bell System revenue losses to SCC competition, it will also result in diverting a substantial

^{29/} The extent to which SCC's are offering voice grade facilities is not clear on this record, but apparently that is a substantial part of their service offerings. However, to the extent that a digital network is proposed, such as the one by Data Transmission Company, the same conclusion would not necessarily apply, particularly since Bell is now proposing to offer its own Dataphone Digital Service. See, e.g., 40 Telecommunications Reports at 1-8, March 25, 1974.

amount of toll traffic to Bell's own private line service, since the lower price on Bell's high density routes will induce large toll users to switch their service from the toll network to private line. Thus, the revenue contribution to interstate overhead and common costs may be in part retained, which otherwise would be lost to the specialized common carriers, but the reduction in use of the toll network clearly will be substantial in either case.

Diversion of traffic from the toll network results in shifting costs back onto the intrastate telephone user, because the current procedures for jurisdictional separations (i.e., the "Ozark Plan") allocates annual local plant costs between State and interstate jurisdictions as a function of the relative interstate and intrastate usage by telephone service subscribers. Moreover, the FCC has recently ordered the Bell System and the independent telephone industry to interconnect their foreign exchange networks with the specialized common carriers,^{30/} which has the effect of increasing the relative exchange usage as a result of traffic that is in reality predominantly interstate in nature. It is the cost effect on intrastate subscribers of the relative reduction of interstate toll usage which the Committee has quantified in its estimates of the cost of SCC competition set forth above in Section III.

^{30/} In the Matter of Bell System Tariff Offerings of Local Distribution Facilities for Use by Other Common Carriers, et. al., FCC Docket No. 19896, FCC 74-457, adopted and released April 23, 1974.

Under the Ozark Plan currently governing jurisdictional separations of annual non-traffic sensitive local plant costs between State and interstate service, the extent to which such costs are assigned to interstate service is dependent upon the relative Subscriber Line Use (SLU) of the plant for interstate toll, intrastate toll and local exchange traffic. In addition, relative usage is measured by determining actual minutes of use (i.e., holding time) during a given period of time, from which the relative percentage function (i.e., SLU factors) are calculated. The SLU factor is then inserted into a mathematical formula which, when multiplied out, results in the percentage of local plant costs which are allocated to interstate service. The ultimate percentage derived from the SLU factor is known as the Subscriber Plant Factor or "SPF". In 1973, the nationwide SPF for the telephone industry as a whole was 18.9 percent, and resulted in the allocation of approximately \$2.2 billion of industry subscriber plant costs to interstate service.

Interstate toll usage has increased rapidly in recent years, in part due to the price stability made possible by cost-saving technological improvements, and its growth has been great enough that it has out-paced the growth of intrastate and exchange usage. Moreover, since the SLU factor for interstate toll has been increasing, the interstate SPF has likewise been increasing, resulting in proportionately more local plant costs being allocated to the interstate service.

The effect of permitting specialized common carrier competition, however, is to reverse that trend. First, a portion of the interstate toll growth and traffic will be diverted to SCC competition. More importantly, repricing strategies adopted by the

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Bell System, such as the high-low tariff now waiting FCC approval, will have the effect of diverting large message toll users in the long haul markets from the toll network to Bell's private line service. The result, therefore, will be that the growth of interstate toll usage will be slowed to the point that it is only growing at the same rate as, or at a slower rate than, intrastate toll and exchange service usage. Thus, under the Ozark Plan, the yearly growth of the SLU factor will be stopped or reversed, with the result that revenue requirements which should have been allocated to interstate service will be shifted back to intrastate service, resulting in higher rates for the intrastate telephone user.

Permitting the specialized common carriers to have access to foreign exchange networks, as the FCC has recently ordered, will contribute to siphoning off the growth of the interstate SLU factor. Essentially, the foreign exchange network links cities within a State via the switched network, and a message which in fact originates in, say, Washington, D.C., via a specialized common carrier and is transmitted to San Francisco via SCC facilities would then enter the telephone company's network in San Francisco and be transmitted through the foreign exchange network to another city in California. Thus, so far as the telephone company is concerned, such traffic appears as intrastate traffic and is measured as such for purposes of determining the SLU factor, notwithstanding the fact that the traffic itself in reality is interstate traffic. In turn, this has the effect of increasing the relative intrastate minutes of use in comparison to interstate minutes of use, thereby reducing the interstate SPF and the allocation of annual local plant costs to interstate service. The result, again, is to shift costs

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from interstate to intrastate jurisdictions and to require an increase in the telephone rates subject to State regulatory jurisdiction.

On this basis, the Committee estimates that the total annual costs shifted from interstate to intrastate jurisdictions as a result of SCC competition will reach a minimum of approximately \$390 million annually by 1980, increasing to approximately \$890 million annually by 1984. On a cumulative basis, the costs are estimated to exceed \$1.1 billion by 1980, increasing to approximately \$3.9 billion by 1984. Of those amounts, the portion allocated to exchange subscribers is estimated to be \$270 million annually by 1980, with the State toll portion estimated at approximately \$120 million annually, and by 1984 the exchange and State toll portions are expected to reach approximately \$620 million and \$270 million annually, respectively. (See Table 6).

A detailed explanation of the derivation of these estimates is set forth in Appendix D.

In the Committee's judgment, however, the foregoing tends to understate significantly the true "cost" of SCC competition for the intrastate telephone user. Irrespective of the effect of SCC competition, current separations procedures no longer provide sufficient support for intrastate services, and further change is now required to ensure that the interstate sector continues to bear its fair share of the cost of providing service. In recognition of this, the NARUC filed a petition for rulemaking with the FCC on December 19, 1973, proposing two changes in separations procedures. 31/ One of the

31/ In the Matter of the Petition of the National Association of Regulatory Utility Commissioners to Amend Part 67 of Title 47 of the Code of Federal Regulations, FCC Docket No. 18866, RM-2302.

proposals is to modify the manner by which the interstate SPF is computed, thereby increasing it, and the other proposal is to apply the SPF to certain types of plant now allocated on a different basis. In terms of impact on the relative allocation of revenue requirements between State and interstate jurisdictions, the proposal to modify computation of the SPF is the less significant one.

Historically, as a practical matter, cost reductions at the interstate level brought about by technological innovation have made it easier to bring about needed separations changes. The significance of such changes for the intrastate telephone user is illustrated by the fact that the interstate allocation factors for local exchange plant currently range from a low of about 12 percent to a high of almost 45 percent and average about 19 percent for the Bell System, as compared to less than 3 percent in 1950.

However, the anticipated pressure on interstate intercity revenues brought about by SCC competition makes it less likely that the necessary modification of separations procedures will be effectuated. Obviously, such a "cost" is impossible to specifically isolate or quantify, but for purposes of comparison the Committee points out that merely failing to adopt its proposed modification of the interstate SPF because of SCC competition would increase intrastate costs by more than \$700 million annually by 1980 and \$1.3 billion annually by 1984, compared with \$390 million and \$890 million annually, respectively, as reflected in the Committee's estimate above. Furthermore, merely

delaying implementation of this proposal for five years as a result of SCC competition would increase the total cost to intrastate rate payers by more than \$1 billion over the expected costs under current separations procedures. Under these circumstances, therefore, the conclusion is clearly warranted that SCC competition, in addition to interconnection, poses a substantial threat to the widespread availability of basic telephone service at reasonable prices under current regulatory practices.^{32/}

Who Will Pay?

A further issue of critical importance to the Committee is, given that there will be a substantial adverse economic impact on intrastate telephone subscribers resulting from interconnection and specialized common carriers, who is likely to bear the cost of such competition? The Committee has been greatly concerned over the possibility that it will be the residence subscriber who will be required to pick up the tab. However, since intrastate subscribers include both business and residential users, the mere fact that costs will be shifted to the intrastate jurisdictions as a result of interconnection and specialized common carriers, as shown above, does not of itself demonstrate that those costs will fall upon the residential subscribers.

In theory, the fact that the specialized common carriers ser-

^{32/} The Committee also notes that, as in the case of competition in the terminal equipment market, injecting specialized common carrier competition results in an inherent conflict between AT&T's role as a profit-seeking organization and its duty of service to the public. The most rational response to competition is to realign private line rates to minimize interstate revenue diversion and to retain as much contribution to overhead and common costs as possible. Although such a response is beneficial to interstate ratepayers as a whole, since overall interstate revenues and contributions are maximized, this result is accomplished by shifting traffic from the toll network to private line service and shifting costs from interstate service to intrastate service, thereby adversely affecting its basic telephone subscribers.

vices and interconnection--particularly of PBX and key systems--are primarily designed to benefit business rather than residential subscribers makes it logical that the persons who benefit from these policies, i.e., business, should also be required to pay the costs. In practice, such a result is far from clear.

Historically, State regulatory commissions have generally employed statewide rate averaging and value of service pricing considerations in setting the level of intrastate rates. Under such an approach, detailed cost accounting on the part of the industry has not ordinarily been required, but, as previously demonstrated, the price levels for vertical services have been established so as to subsidize basic exchange service. When competition is injected into the station equipment market, however, the question of costs becomes extremely important and must be determined so that the regulatory commissions can develop standards by which to supervise the competitive pricing responses of the telephone industry. Moreover, as shown above, the primary problem to be faced by regulators is the proper manner for allocating overhead and common costs of service.

Regardless of whether such an approach to intrastate rate-making is overdue, as some have argued, the Committee believes that reliance upon cost accounting as a panacea for determining how the costs of interconnection and specialized common carriers are to be spread is largely illusory. There are broad philosophical differences of opinion as to the proper manner of cost allocation, and a decision to adopt one approach over another is necessarily arbitrary in the final analysis, no matter how

persuasively it may be rationalized. Thus, the ultimate decision on cost allocation cannot be separated from an underlying objective which the decision may help to realize.

In the instant situation, as stated above, the purpose of making cost allocation decisions is to ensure that "fair" competition exists between the telephone industry and its competitors. Translated, this means that the issue is the extent to which the industry will be permitted to lower its prices in the competitive markets. Nevertheless, the basic thrust of the decision to permit competition, namely, shifting costs to the intrastate ratepayer, is the same regardless of the specific, ultimate result. Accordingly, it is the thrust of the policies on interconnection and specialized common carriers in terms of "cost shifting" which concerns the Committee, and which the Committee believes will almost inevitably result in increasing the cost of basic service for residential subscribers.

First, it is unlikely that the telephone company will be able to shift the cost of interconnection and specialized common carriers directly onto those subscribers who are creating the costs. To take PBX and key system interconnection, for example, even if telephone company prices for these services were not lowered, the subsidy diversion from exchange service which will take place this year alone would justify a 100 percent increase in the line rates of interconnected subscribers, according to the Committee's estimate, if such an approach were attempted. In addition, the Committee believes it is clear that if the telephone companies were permitted to represent to their subscribers that going interconnect would result in an immediate 100 percent increase

in line rates, interconnection would be sharply curtailed. To say the least, such an approach would be of doubtful legality in view of the substantial antitrust and unjust discrimination issues that would be raised.

Alternatively, if the telephone company attempts to spread the intrastate costs of interconnection and SCC competition among its business subscribers by increasing all business line rates,^{33/} the Committee estimates that a minimum increase of 9 to 22 percent would be required by 1977, 19 to 30 percent by 1980 and 32 to 35 percent by 1984, depending upon the extent of competitive price reductions in the vertical services. However, such sharp price increases would give further impetus to interconnection since the business subscriber would be seeking ways to offset the ever increasing cost of communication service. Thus, a vicious cycle would be created in which further stimulation of interconnection would require even sharper increases in line rates, which in turn would add impetus to interconnection. Clearly, adopting such a policy would be largely, if not completely, self-defeating both to the objective of minimizing the loss of subsidy due to interconnection and of minimizing the diversion of units in service to interconnection.

Spreading the costs evenly between business and residential subscribers, of course, would reduce the overall impact on each class of service, but the effect of stimulating interconnection would still occur, albeit over a longer period of time. If this strategy were adopted, the Committee estimates that a minimum average increase in business and residential line rates of 3 to 6 percent would be required by

^{33/} At the intrastate level, insofar as SCC competition is concerned, the cost appears in the form increased local plant costs assigned to intrastate service, as shown above. Thus, of necessity, the telephone company must spread the costs among its intrastate telephone subscribers.

1977, 6 to 9 percent by 1980 and 10 to 11 percent by 1984, again depending upon the extent of competitive telephone price reductions in the vertical services.^{34/}

Thus, in the end, it is almost certain to be the residential subscriber upon whom the costs of interconnection and specialized common carriers would be shifted, since no adverse competitive impact occurs by adopting this strategy. In such case, the Committee estimates that by 1977, a minimum increase of 4 to 9 percent in residential main station rates would be required, an 8 to 13 percent increase would be required by 1980 and a 15 to 16 percent increase would be required by 1984, depending upon the level of competitive price responses in the vertical services by the telephone industry. It should be emphasized that these estimated increases are solely attributable to interconnection and the specialized common carriers, and are exclusive of other "normal" price increases that can be expected from other causes.

^{34/} The vertical service price reductions, both in this situation and in the situation where all interconnect costs were offset by business subscriber line increases, would obviously result in some telephone company business subscribers being better off after the rate realignment than before. To the extent this occurs, of course, no impetus for interconnection would be generated. However, since prices on specific pieces of vertical service equipment do not vary as a function of the number of installed lines, those subscribers with a high ratio of line charges to vertical service equipment charges would be adversely affected by the change and would be induced to go interconnect. In turn, as the level of interconnection increased and the line charge increases required to offset the costs escalated, a smaller portion of business subscribers would be benefited by the change, and the relative amount of business subscribers induced to go interconnect would increase.

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Obviously, the adoption of such a strategy raises broad social and legal issues as to the appropriateness of shifting costs from a competitive market to a monopoly market. As discussed above, however, such a shift in costs no doubt could be persuasively rationalized on any one of a number of cost accounting theories which may be adopted by interested parties, and the Committee by this discussion is not implying a moral judgment on any of the issues raised or strategies which may ultimately be adopted. Nevertheless, the end result--and the critical fact which the Committee wishes to emphasize--is that permitting competition in the station equipment market and in providing point-to-point communication services almost certainly will be to increase the cost of basic telephone service for residential customers under current regulatory practices.

Recommendations for Regulatory Action

In view of the conclusions reached in the course of its investigation, the Committee believes that it would be remiss if it did not offer some suggestions or conclusions as to regulatory action which might be taken to mitigate or avoid entirely the adverse consequences set forth above.

In the specialized common carrier area, the Committee believes that a comprehensive reevaluation of current separations philosophy and procedures is clearly required. The Committee is taking no position as to the specific direction which such reform should take, but it is apparent that a fundamental change in philosophy is required to offset the relative reduction in use of the interstate toll network caused by SCC competition, as well as to accomplish reforms that are currently needed, irrespective of the impact of such competition.

Although the FCC has included questions of separations changes with other significant issues in a recently instituted investigation, 35/ the Committee is concerned as to the contemplated time-frame over which such a study is presently programed to occur, and therefore recommends expedited consideration of this particular issue.

At the same time, consideration of the proposed separations changes pending before the FCC in the NARUC rulemaking petition should not be delayed pending the result of the comprehensive reevaluation. Relief for the intrastate ratepayer is critically needed at the present time, and under no circumstances should it be delayed to determine the extent to which future relief can be accomplished in a different manner.

The problems resulting from interconnection, however, are much more complex and require more extended treatment. To the extent that jurisdictional separations are reformed, of course, the economic impact of interconnection could be mitigated in part, but this of itself, would not resolve the economic impact entirely,

35/ In the Matter of Economic Implications and Interrelationships Arising from Policies and Practices Relating to Customer Interconnection, Jurisdictional Separations and Rate-Structures, FCC Docket No. 20003.

nor would it address the issue of quality of service.

To date, questions relating to interconnection have largely treated the policy as an indivisible whole, although separate technical advisory committees have been created to consider different classes of station equipment deemed appropriate for interconnection to the network. In the Committee's judgment, however, a distinction should be made as to various subgroups existing within the interconnect amalgam, as follows:

(1) The requirements of large institutional users as such, predominately involving complicated multi-line equipment such as PBX and key systems.

(2) The requirements of data communication transmission, whether or not it takes place within the confines of a large institutional subscriber. The issues with which this group is primarily concerned relate to ownership of data sets, such as modems, and any needed connecting arrangements.

(3) The requirements of individual users of the telephone network, whether such use takes place in the home or within the context of a small or large institutional framework. Items in this category include such equipment as answering devices, automatic dialers, conferencing devices and call diverters, which primarily benefit the individual user rather than the large institutional subscriber as such, but a certain amount of relatively elaborate equipment, such as a call restrictor, which only a large subscriber can profitably employ, should also be included in this category.

Insofar as the complex, multi-line station equipment used by large institutional subscribers is concerned, i.e., primarily PBX and

key systems, such services have historically been an integral part of telephone company service offerings, and the ability of telephone companies, both Bell System and independent, to offer basic exchange service at a reasonable price has been heavily dependent upon subsidy revenue from such equipment. Thus, the availability of competitive sources of supply not only threatens inroads into traditional telephone service, as it has been known, but also threatens substantial shifts in the cost of operation from business subscribers to residential subscribers, as shown above.

On the other hand, proponents of interconnection have argued that competition will result in a wider choice of service features being made available to large subscribers, in addition to direct cost reductions, as well as in the benefits of technological innovations being more rapidly made available in the market place.

However, a number of manufacturers and suppliers of this equipment have always been required to service the needs of the independent telephone industry, which should be sufficient to ensure that technological and service innovations are not retarded. Accordingly, the most that can be said for interconnection in this context is that it assists in the distribution of such innovations after they are developed, but it does not appear to be accurate to contend that interconnection itself is responsible for the innovations.

In the Committee's judgment, the primary difficulty being experienced in this area, apart from purely price considerations, is that some large subscribers feel that the benefits of the

technological innovations that have occurred have not been adequately made available to them. This feeling is apparently due in substantial part to the fact that most of the large telephone companies, including particularly the Bell System, have affiliated equipment manufacturers which supply substantially all of the operating companies' terminal equipment requirements. Thus, it is argued that the telephone companies have not been as responsive as they should be to including the technological innovations and service features in their product lines.

Complete consideration of this argument, of course, also requires an evaluation of the costs associated with rapid retirement of existing plant made obsolete by new equipment and the consequent impact on telephone depreciation rates which would occur. It also requires delving into the exceedingly complex question of the overall desirability of vertical integration in the telephone industry.

Such issues are certainly beyond the scope of this Committee's investigation. However, in the regulation of utilities certain balances must be struck so that, on the one hand, the utility is not permitted to "churn" its inventory, thereby sharply increasing the cost of service, and on the other hand, it is not permitted to stagnate, thereby denying subscribers the benefits of service innovation.

Clearly, there are no simple answers to this problem, notwithstanding the answer of those supporting interconnection that the necessary trade-offs and decisions should be dictated by the market place. Adopting that approach has serious consequences for basic exchange telephone subscribers, including residential customers, who are not benefited by such a policy and who nevertheless remain the responsibility of the regulators. It is therefore an inadequate response on the part of the regulatory community to simply adopt a policy of free competition and let the economic chips fall where they may.

To the extent the telephone industry may have been too slow in making available technological and service innovations to its large institutional subscribers, a question properly is raised as to the adequacy of existing service as it pertains to this type of equipment. If necessary, formal proceedings before the regulatory agencies could be instituted to explore such issues. However, in the Committee's judgment the economic dislocation resulting from permitting interconnection of this type of equipment far outweighs the benefits that may be achieved; moreover, the benefits which interconnection pretends to achieve can be obtained by traditional regulatory procedures without incurring the disadvantages of the present policy of interconnection.^{36/}

Under all of these circumstances, therefore,

^{36/} To the extent large institutional subscribers may be merely hoping to achieve rate concessions at the expense of other subscribers, the Committee does not view their interest in interconnection as a legitimate one.

the Committee recommends that the legitimate grievances of large institutional subscribers be redressed by appropriate regulatory action other than by permitting the interconnection of customer-provided PBX and key systems, and related equipment.

With respect to the terminal equipment needs associated with data communication transmission, the Committee believes that the essential problem lies in the ability of computer manufacturers and users to turn over data sets and protective connecting arrangements sufficiently rapidly to keep pace with the exploding technology which is occurring in the computer industry itself. A related issue, the Committee believes, is that the computer manufacturers are concerned that any protective connecting arrangements which may be required do not adversely impact the technical quality of data transmission.

As noted above, rapid technological innovation and inventory turnover is to an extent inconsistent with sound utility practice, which the Committee believes tends to create an inherent conflict in approach between the telephone industry, on the one hand, and the computer industry, on the other hand, regarding the proper marketing strategy for data communication terminal equipment. At the same time, a Bell System witness conceded at the hearing that the telephone industry, including Bell, does not hold itself out to provide the complete terminal equipment requirements of data communication subscribers.

Furthermore, it is clear that the terminal equipment subject to competitive pressures as a result of interconnection

represents only a minor portion of the entire complex of equipment, including computers and related hardware, required in data communication, and that the demand for near error-free transmission characteristics requires the computer manufacturers to maintain the utmost technical integrity in their equipment. All of these considerations lead to the conclusion that the quality of network performance would not be significantly adversely affected if the computer industry were permitted to provide all or most of the terminal equipment required for data communication. In addition, the Committee recognizes that data sets have not been a historically significant source of subsidy revenue for exchange service, and therefore the economic dislocation resulting from the telephone companies not retaining this market would not be great.

By the same token, the telephone industry has a legitimate interest in maintaining a well defined interface between its own equipment and equipment provided by the computer industry. Moreover, since increasing the signal level beyond the minimum criteria deemed necessary by the telephone industry apparently tends to reduce the transmission error rate, the telephone industry has a legitimate interest in incorporating certain protective features in loop and maintaining control thereover. Nevertheless, these technical problems do not appear to be insurmountable, and since the computer industry is relatively concentrated, as is the telephone industry, the Committee sees no reason why good faith negotiations between the industries cannot result in developing the necessary technical standards which each

industry requires to make its equipment compatible with the other.

For these reasons, the Committee recommends that the telephone industry work together with the computer industry to develop an internal program of standards and certification for the interconnection of terminal equipment required for data communication transmission. The Committee believes that such a program could be implemented by appropriate tariff revisions and could be operated on essentially a cooperative basis between the industries involved, with minimal direct regulatory involvement.

The problem of ancillary equipment such as answering devices, automatic dialers, conferencing devices, call diverters and call restricters, largely involves a different set of considerations from either of the other two classes of interconnect equipment. Such equipment generally may be regarded as attachments to, and not replacements of traditional telephone service, and consumer preferences in this regard are extremely difficult to predict. Similarly, no matter how diverse a product line the telephone company may offer, it is unlikely that it can completely satisfy the diverse desires of its subscribers for such equipment. Furthermore, since the functions performed by this equipment are not an integral part of traditional telephone service, the telephone company does not have the same incentive as the manufacturers to develop and market it vigorously.

The Committee fully agrees that the legitimate consumer demand for non-harmful equipment of this type should be met so far as reasonably possible, and it does not believe that it would

be appropriate for the telephone industry itself to devote a significant portion of its investment base and resources to trying to fulfill such demands. At the same time, the Committee recognizes that the risk-taking inherent in attempting to predict and satisfy diverse consumer preferences has been the traditional province of classic American entrepreneurship. The same principle appears applicable herein, as evidenced by the fact that substantially all of the development and manufacturing of such equipment at the present time is done by companies other than utility-affiliated equipment manufacturers, with the operating company only determining which brand it chooses to offer to its subscribers.

As in the case of other vertical services, the telephone industry has priced its ancillary equipment offerings to contribute a subsidy to the operation of basic exchange service. Clearly, however, such a pricing philosophy has had the additional effect of restricting the market for such equipment and limiting the availability of the benefits thereof to subscribers. In addition, such a marketing philosophy has undoubtedly frustrated the manufacturers of the equipment, who in turn have sought alternative marketing methods, i.e., directly to the consumer.^{37/}

^{37/} The current requirement that such equipment be interconnected only through connecting arrangements provided by the telephone company for a monthly charge undoubtedly is also viewed by the manufacturers of such equipment as a market restricting device, with the result that they apparently make little effort to make sure the consumer understands what the law requires in order to interconnect. In turn, the consumers frequently innocently directly connect the equipment to the network in violation of the law, and in many cases also adversely affect the quality of telephone service. The Committee recognizes the legitimate grievances of all parties concerned, but it cannot condone irresponsible marketing strategies which victimize the consumer and result in degradation of network performance.

Certainly, from the consumer's point of view, it makes little sense to "rent," say, an answering device from the telephone company for approximately \$20 per month when he can buy the same type of equipment, if not the identical brand and model number, from a local department store for a one-time charge of approximately \$150 to \$250. If the device only performs for a year or two before requiring maintenance, he could buy a new one at that time for less than he would have paid to the telephone company. Moreover, since little effort is made to inform him of the requirement of a protective device, he will frequently believe that it is lawful for him to directly connect the device to the network with the jack or other interconnect mechanism included with the equipment. Even should he be aware of interconnect regulations, however, he may see little need to pay for a connecting arrangement on a monthly basis rather than pay a one-time installation charge to the telephone company.

Nevertheless, permitting direct sale of this type of equipment to the consumer without the knowledge or control of the telephone company to date has resulted in widespread illegal interconnection and substantial maintenance problems for the telephone industry, which if permitted to go unchecked, will clearly result in significant degradation of service. When pressed on these issues at the hearing, witnesses for the telephone industry contended that the product lines which they offer come "awfully close" to the total range of equipment available through interconnection, and that the answer to illegal interconnection is more enforcement of existing tariffs.

The Committee cannot agree that this is a fully satisfactory answer. In the first place, as the Committee understands it, current testing procedures are not adequate to detect all classes of illegally interconnected equipment, and the Committee has substantial doubts about wisdom of the industry having to devote a substantial portion of its maintenance efforts toward detecting and removing illegal equipment per se. A far more feasible approach, the Committee believes, would be to adopt a program in which it would be in the mutual interest of the telephone industry and the manufacturers of such equipment alike to ensure that appropriate protection procedures are fully complied with when the equipment is attached to the network.

Second, existing pricing policies, both as to the specific equipment itself and as to the required connecting arrangements, may have an unwarranted side effect of restricting consumer demand for this equipment. The subsidy contribution of this type of equipment to exchange service has not been significant historically, and therefore, as in the case of data sets, substantial economic dislocation would not occur if the telephone companies failed to capture this market. At the same time, including average maintenance costs as part of the monthly cost for protective arrangements may add to the overall restrictive effect which telephone company pricing may have on consumer demand. On balance, therefore, the Committee believes that the arguments in favor of permitting the customer to purchase and provide this type of equipment outweighs the disadvantages of such a policy, providing that a program can be developed

for ensuring that only non-harmful devices are attached to and remain connected to the network.

In the Committee's judgment, however, the number of independent manufacturers which produce this equipment makes it impractical for them and the telephone industry to informally adopt a certification program similar to the one proposed in the case of data communication terminal equipment. Accordingly, the Committee recommends that a formal program of standards and certification be adopted for the interconnection of this class of equipment, and that penalties be provided by law for the advertisement for sale, sale or distribution of non-certified equipment, and for the attachment of devices to the network by unauthorized means.^{38/} In addition, the telephone industry should promptly reconsider its tariff policies with regard to such equipment with the view in mind of establishing a fully compensatory one-time installation charge for its connecting arrangements, with the necessary maintenance work charged for on a compensatory, as-needed basis.

At this time the Committee takes no position as to the precise format which such a program of standards and certification should follow. However, the Committee believes that it should fundamentally be organized and administered by the industries

^{38/} The Committee understands that its proposal in this regard is similar to the practice followed in Australia, where equipment provided by the telephone company is not permitted to be sold in competition therewith, but where ancillary equipment not provided by the telephone company is sold to the consumer subject to a certification requirement. The Committee does not believe that a certification program would be as effective in maintaining the quality of network performance as retaining end-to-end service responsibility with the telephone industry. However, such a program could be expected to substantially reduce the existing widespread illegal interconnection and the problems it is causing, and, if properly operated, need not be significantly less efficient than end-to-end service responsibility.

affected, with direct regulatory involvement minimized to the greatest extent possible. To this end, the Committee believes that a program utilizing independent certification laboratories, not associated with any regulatory agency, manufacturer or distributor, may offer some promise, but the Committee has not attempted to develop specific recommendations on this issue herein.

Conclusion

It is apparent from the Committee's investigation that those who discounted or ignored the potential economic effect of permitting interconnection and specialized common carriers substantially misconceived the nature of the impact which will result. Clearly, the issue is not whether telephone industry operating revenues will continue to increase year by year because, as this investigation has demonstrated, an adverse economic impact occurs within the context of increasing operating revenues.

Rather, it is clear that the adverse impact at issue results in the gradual shifting of costs of operation from one class of subscriber to another, in this case to the detriment of the residential user. Contrary to the contentions of many parties, not only is such an impact almost certain to occur, absent immediate corrective regulatory action, but the degree of impact which is threatened is such that the widespread availability of basic telephone service at reasonable prices may well be jeopardized.

It is further clear, and particularly disturbing to the Committee, that these policies were implemented prior to any serious consideration of their probable economic impact, and that existing regulatory procedures are wholly inadequate to detect or correct such impacts

as they occur. No procedure exists, for example, by which the relative contribution of PBX and key systems may be routinely analyzed on a continuing basis to prevent shifts in cost allocations from business to residential service, nor is information ordinarily available to regulatory agencies as to market penetration levels being achieved by the interconnect industry. Yet, such information is fundamental to the ability of the regulatory community to effectively discharge its responsibilities in ensuring that the quality and availability of service is not impaired.

Similarly, no routine procedure is available whereby the regulatory community can monitor the extent to which specialized common carrier competition and the competitive responses thereto may be siphoning off the natural growth of the interstate SLU factor for jurisdictional separations purposes. Again, however, such a procedure is fundamental to the ability of regulators to detect and correct any adverse effects which specialized common carrier competition may have on basic telephone subscribers.

Had studies similar to the instant investigation been made prior to implementation of the policies at issue, no doubt appropriate regulatory strategies could have been devised long ago to ameliorate or vitiate the adverse consequences thereof. Now, however, regulation must move with particular dispatch in order to successfully avert the dangers faced.

In light of the findings and conclusions herein contained it is no longer enough to acknowledge that economic and quality

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of service issues are an integral part of interconnection and specialized common carrier policies. The time for debate and resolution of such questions has long since passed, and continued refusal to acknowledge this fundamental fact only ensures that the consequences foreseen herein will be tomorrow's reality. What is needed now is affirmative action, predicated upon knowledge of these consequences, for securing the benefits in the public interest without incurring the penalties.

Issued in Washington, D.C. this 15th day of May, 1974, by the Committee on Communications of the National Association of Regulatory Utility Commissioners.

Francis Pearson, Washington, Chairman
Ben T. Wiggins, Georgia
Norman A. Johnson, Jr., Mississippi
William R. Clark, Missouri
George I. Bloom, Pennsylvania
William Symons, Jr., California
John G. Feehan, Maine
Edward P. Larkin, New York
Marvin R. Wooten, North Carolina
Archie Smith, Rhode Island

BELL SYSTEM RATE INCREASES
GRANTED BY STATE AGENCIES SINCE
JANUARY 1, 1969, AND RATE
INCREASE REQUESTS NOW PENDING

April 15, 1974

NATIONAL SUMMARY

Total Amount Requested	\$ 4.9 billion
Total Amount Granted	\$ 2.9 billion
Total Amount Pending	\$ 0.47 billion

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April 15, 1974

BELL SYSTEM RATE INCREASES
GRANTED BY STATE AGENCIES SINCE
JANUARY 1, 1969, AND RATE
INCREASE REQUESTS NOW PENDING

(Note: Footnotes appear at end of tabulation, on p.5)

<u>State</u>	<u>Requested</u>		<u>Granted</u>		<u>Pending</u>
	<u>Date Filed</u>	<u>Amount</u>	<u>Date Ordered</u>	<u>Amount</u>	<u>Amount</u>
Alabama	4-15-71	\$ 19.9 M	7-12-71	\$ 17.8 M	\$
	1-19-73	29.3 M	(8-17-73	0	
			(9-14-73	29.3 M (1)	
Arizona	4-14-71	30.7 M	4-10-72	8.1 M	
	10-72	7.9 M	3/73	5.7 M	
California	3-13-70	194.9 M	6-22-71	[143.0 M] (2)	
	8- 6-71	77.4 M	8- 8-72	68.9 (2)	
	6-21-72	[198.2 M]	8- 8-72	55.4 M (2)	
	9-15-72	290.0 M (3)			290.0 M
Colorado	4- 2-68	open-end	1- 7-69	5.9 M	
	10-1-70	28.5 M	3-25-71	11.2 M	
	1-27-72	43.0 M	9-19-72	12.8 M	
	3-16-73	9.8 M	4-16-73	9.8 M	
	3-16-73	open-end	4-17-73	0	Dismissed
	3- -74	29.8	4- -74	0	Denied
Connecticut	11-18-68	23.9 M	8-20-71	19.2 M	
	11- 5-71	54.7 M	4-13-72	36.8 M	
Delaware	4-6-70	2.8 M	10-22-70	2.3 M	
D. C.	11- 8-68	open-end	6- 1-71	0	
	8-31-71	22.6 M	7- 6-72	13.2 M	
			6- 6-73	4.4 M additional	
	4-19-73	21.6 M (4)	1-25-74	8.1 M	
Florida	8-11-69	32.0 M	3-30-70	21.1 M	
	6-28-71	54.1 M	1- 4-72	47.1 M	
	12/72	106.8 M	8- 2-73	32.8 M interim	
				+49.7 M additional	
Georgia	8- 5-69	25.5 M	12-11-70	20.8 M	
	7-30-71	24.4 M	(9- 5-72	11.3 M	
			(1-16-73	10.4 M additional	

[] Figures not included in totals.

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	<u>Requested</u>		<u>Granted</u>		<u>Pending</u>
	<u>Date Filed</u>	<u>Amount</u>	<u>Date Ordered</u>	<u>Amount</u>	<u>Amount</u>
Illinois	12-11-69	\$ 86.5 M	11-6-70	\$ 77.9 M	\$
	12-18-70	2.2 M	12-15-71	1.5 M	
	9-23-71	182.0 M	8-11-72	44.6 M (5)	
	11-21-72	20.8 M	10- -73	(6)	
	1-25-73	62.0 M	12-21-73	58.0 M (7)	
			12-27-72	0.2 (8)	
Indiana	12-11-70	26.6 M	7-9-71	24.0 M	
	4-1-71	4.7 M	12-23-71	4.7 M	
	12- 1-71	14.8 M	8- 4-72	13.2 M	
	12- 6-72	3.5 M	5-11-73	2.1 M	
	12- 6-72	30.5 M (9)	10- 5-73	23.4 M	
Iowa	7-21-71	21.5 M	12-29-72	8.6 M	
	10-31-73	20.0 M	11-30-73	20.0 M (10)	
Kansas	10- 8-71	14.8 M	11-15-72	5.7 M	
Kentucky	12-11-69	2.1 M	10-10-70	1.2 M	
	6-29-70	14.8 M	12-30-70	0	
	12-28-71	3.8 M			3.8 M
	1-14-72	25.7 M	10/72	15.1 M	
Louisiana	12-27-68	24.6 M	11-13-70	18.2 M	
	12-20-71	48.1 M (11)	3-12-73	38.1 M	
	2- -74	23.0 M	3- -74	19.6 M	
Maine	10-15-71	10.0 M	7-14-72	7.8 M	
	9/73	6.3 M			6.3 M
Maryland	10-18-68	open-end	11-19-69	22.8 M	
	4-23-71	42.6 M	1- 6-72	27.5 M	
	6-30-72	40.3 M	9/72	0 dismissed	
	4-28-73	39.2 M	-73	20.8 M	
Massachusetts	7-15-69	56.8 M	1-21-72	56.8 M (12)	
	10- 1-71	79.5 M	1-21-72	43.6 M	
	7-27-72	122.0 M	6-25-73	66.7 M	
	2- -74	42.0 M			42.0 M
Michigan	8- 1-68	50.3 M	8-30-70	14.8 M	
	12-10-70	59.7 M	(12-17-71	(18.0 M interim	
			(4-28-72	(25.8 M additional	
	2-15-73	29.7 M	12-21-73	24.8 M	

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	<u>Requested</u>		<u>Granted</u>		<u>Pending</u>
<u>State</u>	<u>Date Filed</u>	<u>Amount</u>	<u>Date Ordered</u>	<u>Amount</u>	<u>Amount</u>
Minnesota	6-17-71 4- -74	\$ 38.0 M 56.7 M	1-25-72	\$ 34.0 M (13)	\$ 56.7 M
Mississippi	6-28-71 -73	20.1 M 18.8 M	11-30-71	12.9 M 18.8 M (14)	
Missouri	11-15-68 10- 1-71	44.5 M 63.5 M	10- 2-69 8-18-72	30.7 M 35.0 M	
Montana	6/72	.5 M	7/72	.5 M (15)	
Nebraska	6-11-71 3- 6-72 -73	13.5 M 4.4 M 6.0 M	1-31-72 6-19-72 1- 3-74	6.7 M 2.0 M 2.2 M	
Nevada	-74	1.0 M			1.0 M
New Hampshire	8- 6-71	9.9 M	8-24-72	5.2 M	
New Jersey	9-15-70 2-28-72	79.0 M 120.0 M (16) unknown	1-13-72 12-29-72 12-13-73	48.6 M 55.2 M 17.5 M (17)	
New Mexico	1-14-69 5/73 Part I Part II	7.8 M 6.5 M 3.6 M	7- 9-69 11-14-73	5.1 M 5.9 M	
New York	3-20-69 2-16-71 12-18-72	175.0 M 391.0 M 405.0 M	9-1-70 6-23-72 (7- 1-71 (1-17-72 11-16-73	120.8 M (18) + 12.3 M (18) additional 190.0 M + 160.0 M additional 304.0 M	
North Carolina	11-27-70 11-15-71 -73	23.1 M 29.7 M 33.2 M (hearings started November 1973)	8- 2-71 (6-30-72 (10-17-72	13.3 M (6.1 M (+5.8 M (19)	33.2 M
North Dakota	3-27-69 7-30-71	open-end 3.5 M	9-16-69 4-20-72	0.5 M 1.9 M	

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	<u>Requested</u>		<u>Granted</u>		<u>Pending</u>
<u>State</u>	<u>Date Filed</u>	<u>Amount</u>	<u>Date Ordered</u>	<u>Amount</u>	<u>Amount</u>
Ohio	8- 1-69	\$ 80.0 M	3-27-70	\$ 55.0 M	
	12-11-69	13.3 M	7-10-70	9.7 M	
	8- 9-71	165.0 M	8- 7-73	98.0 M	
	12-28-71	22.7 M	8-24-73	14.1 M	
Oregon	2-21-69	12.4 M	12-22-69	1.4 M	
	1-30-70	1.6 M	3- 1-70	1.6 M	
	2-17-71	26.5 M	12-31-71	16.8 M	
	9-15-72	32.8 M	7-14-73	18.8 M (20)	
Pennsylvania	12- 3-70	73.0 M	12-14-71	52.6 M	
	12-17-72		1-19-73	3.4 M (21)	
	12-17-72	59.8 M	12-12-73	36.6 M	
	10-24-73	unknown (22)			
Rhode Island	4- 1-69	9.2 M	1-30-70	5.9 M	
	4-16-71	14.8 M	(5- 4-72	(8.0 M	
			(7-20-73	(+6.8 M (23)	
South Carolina	8- 9-71	12.2 M	12-22-71	8.8 M	
	8-24-73	11.1 M	-74	9.1 M	
South Dakota	5-22-72	open-end	-74	0.9 M	
Tennessee	9-10-71	24.2 M	(5-23-72	10.3 M	
			(12/72	+ 3.7 M	
	6/73	31.0 M	12-24-73	16.5 M (24)	
Texas	11-30-70	1.2 M	2-25-71	1.2 M (El Paso)	
	5/72	23.7 M	4-11-73	15.0 M (Houston)	
	-72	16.8 M	-72	14.0 M (Dallas)	
	1/73	1.3 M	7/73	1.3 M (El Paso)	
	11/72	unknown	2- 1-73	4.9 M (San Antonio)	
Utah	6-11-68	12.3 M	4-11-69	2.1 M	
	2/74	15.0 M			15.0 M
Vermont	9-15-72	7.3 M	5-17-73	0 dismissed	
	7- 2-71	1.9 M	11-29-71	1.9 M	
	9-15-72	7.2 M	4-12-73	0	
	1/74	6.7 M (25)			6.7 M

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	<u>Requested</u>		<u>Granted</u>		<u>Pending</u>
<u>State</u>	<u>Date Filed</u>	<u>Amount</u>	<u>Date Ordered</u>	<u>Amount</u>	<u>Amount</u>
Virginia	4-15-71 6-15-72	\$ 51.6 M 32.7 M	11-17-71	\$ 33.3 M 12.6 M (26)	\$
Washington	12-4-68 1-29-71 6-16-72 3- 1-74	26.7 M 36.2 M 44.9 M 15.0 M	11- 3-69 12-23-71 4/73	14.0 M 19.0 M 23.6 M	15.0 M
West Virginia	10-22-69 6/72	11.1 M 14.8 M	5- 4-72 11-16-72	7.6 M 14.8 M interim	
Wisconsin	12-30-68 11-9-70 7-22-71	21.6 M 6.3 M 41.3 M	6- 9-70 1-22-71 12-23-71 11-21-72	12.1 M 6.3 M 10.2 M +15.1 M additional	
Wyoming	11- 4-71	4.3 M	5-10-72 7-10-73	1.8 M [2.3 M] (15)	
Totals		<u>\$4,883.8 M</u>		<u>\$2,891.4 M</u>	<u>\$469.7</u>
For summary purposes use:		\$4.9 billion		\$2.9 billion	\$0.47 billion

Footnotes

- (1) Although the Alabama PSC denied the increase on August 17, 1973, South Central Bell appealed the decision to the Montgomery County, Alabama, Circuit Court. The Court authorized the Company to put the rates into effect, beginning September 19, 1973, under bond and subject to refund, pending a decision by the Commission on permanent increases.
- (2) Although the California PUC granted a \$143.0 M increase, on June 9, 1972, the California Supreme Court annulled that increase. In a series of orders issued on August 8, 1972, the California PUC ordered the Company to refund all the monies collected under the \$143.0 grant, authorized a permanent increase of \$55.4 M and reaffirmed a \$68.9 M wage recoupment increase.
- (3) The initial request of \$328.0 M was reduced, first to \$301.3 M, and later to \$290.0 M. Hearings have been completed; briefs are being filed. A decision is not expected before spring of 1974. A staff recommendation would allow \$177.0 M and a 7.9% rate of return in lieu of current allowable rate of 7.85, but added that the Company is earning 9.2%.

- (4) The initial request of \$26.0 M was reduced to \$21.6 following the D.C.P.S.C. allowance, on June 6, 1973, of \$4.4 M additional revenues under the Company's earlier application.
- (5) The Illinois Supreme Court ordered the Commission to rehear this case, because of what the Court termed "improper expenses" concerning (1) purchases from Western Electric which has a higher rate of return than the 7.33 percent allowed the Illinois Bell Telephone Company; (2) the annual licensing fee that Illinois Bell pays AT & T; (3) legislative lobbying expenses; and (4) charitable contributions.
- (6) The Illinois Commerce Commission cancelled and annulled this request in the light of the State Supreme Court order discussed in footnote (5). The Commission indicated that the request may be reconsidered in conjunction with its review of the Court order.
- (7) The Illinois Commerce Commission, in February 1974, denied requests for rehearings filed by Illinois Bell Telephone Company and the Independent Voters of Illinois. The parties appealed the Commission decision to different courts.
- (8) An increase of \$244,750 was given to Southwestern Bell for its service area in Illinois.
- (9) The original request of \$32.0 M was later reduced to \$30.5 M.
- (10) Effective January 1, 1974, interim increase subject to refund.
- (11) The original request of \$36.1 M was later increased to \$48.1 M.
- (12) \$33.0 M of this total was granted under Court order in 1970, and the remaining \$23.8 M was granted by the Massachusetts DPU on January 21, 1972.
- (13) The case is under appeal.
- (14) Rates were put into effect by South Central Bell under \$10.0 M bond, following PSC suspension of proposed increase.
- (15) Service connection charges.
- (16) The original request of \$137.0 M was reduced to \$120.0 M attributable to a change in test period.
- (17) This is an interim increase permitted under an automatic adjustment clause, approved by the BPUC on December 13, 1973. The BPUC, on December 20, 1973 accepted the company's tariffs, to be effective for bills rendered on or after January 1, 1974.
- (18) The New York PSC order allowed \$120.8 M of \$133.1 M recommended by its hearing examiner. The Company appealed to the New York Courts for the additional \$12.3 M which was allowed on June 23, 1972.
- (19) The additional \$5.8 M was granted to offset 1972 wage increases.
- (20) The company has appealed this order, which removed "excess earnings" resulting from company transactions with Western Electric. The order reduced the utility's rate base by \$2.3 M and its operating expenses by \$207,181. The Oregon Commissioner held that Western Electric must be considered as an integral part of the Bell system.

- (21) Toll rate increase to maintain parity with interstate rates.
- (22) Suspended until June 23, 1974.
- (23) The additional allowance of \$6.8 M resulted from further review of the case by the PUC, following an order by the Rhode Island Supreme Court in Rhode Island Consumers' et. al. v. Smith et. al., Nos. 1784-M.P., 1786-M.P., March 28, 1973.
- (24) The Davidson County (Tenn.) Chancery Court has this rate case under appeal by the Company.
- (25) The company also requested \$4.8 M interim increase.
- (26) Originally submitted at \$36.0 M, reduced by order of the Virginia Corporation Commission to \$23.0 M, later revised by company to \$31.0 M, and most recently to \$32.7 M, approved January 1974. The Company has appealed this case.

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IN NARUC INVESTIGATION

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The agencies of the States, District of Columbia, Puerto Rico, and the Virgin Islands engaged in the economic and quality of service regulation of communication common carriers.

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DERIVATION OF THE INTERCONNECTION ESTIMATES

The Committee's major objective in making its own estimate of the probable impact of interconnection was to make an analysis and produce results which are readily understandable and can be related by the reader to the world around. While such an approach avoids the technical jargon and esoterica which characterize economic analyses, it necessarily requires some simplification of complex interrelationships which the sophisticated observer might find objectionable. Nevertheless, in making this analysis the Committee has diligently attempted to be both realistic (in the sense of making a reasonably accurate prediction of future, uncertain events) and conservative, so that the results will have some meaning to the ordinary reader. Obviously, it is not a simple task, and the reader can judge the results for himself.

In studying the impact of interconnection, the Committee limited itself to analyzing only two specific portions of this market--PBX and key systems. This limitation was imposed not only because it simplified the projection, but also because these two items comprise by far the most substantial portion of the vertical services provided by the telephone companies and, in turn, are the subject of the most intense activity on the part of the interconnect industry.

As stated in the body of the report, the Committee framed its analysis by assuming what it deemed to be the two extremes of possible competitive responses by the telephone industry,

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so that a range of impacts could be projected, with the actual result falling somewhere in between the two. The two extreme responses are:

(1) Price levels are maintained at their current level, and repriced upward as necessary, as though the interconnect industry did not exist. In this situation, competition would primarily be on a service rather than price basis, and the natural growth of the vertical services market, compared to the relatively low base of the interconnect industry at the present time, would tend to retard overall penetration of market levels in the immediate future.

(2) The telephone companies gradually reduced their vertical service equipment prices over a five year period to achieve average contribution levels of 15-20 percent of revenue with the result that the currently existing telco/interconnect market shares would be maintained. In the case of the Bell System, the price reduction would amount to about 10 percent on PBX's and 15 percent on key systems, and the resulting contribution levels would be 15 percent. In the case of the independents, the estimates were derived from the cost/revenue breakdown provided by the United System, and the price reductions assumed were that large PBX's were lowered over a five year period to achieve a contribution of 15 percent of revenue, and 20 percent of revenue for small PBX's and key systems. This amounted to a 31 percent price reduction for key systems over a five year period, diminishing to 28 percent after ten years because of relative changes in the expense levels. In the case of small PBX's, the price reduction amounted to 25 percent over a five year period diminishing to 19 percent

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after ten years, and for large PBX's the price reduction was assumed to be 9 percent over a five year period, diminishing to 3 percent after ten years.^{1/}

The next step was to determine the level which PBX and key system interconnection had achieved in the Bell System at 1973 levels. Since no information was provided by the interconnect industry to the Committee, estimates had to be made based upon telephone company data. The only direct evidence on this point provided by the Bell System was by Pacific Northwest Bell, and therefore the relationships demonstrated by its data were applied to the Bell System as a whole. Such an approach is believed to understate the actual interconnect penetration, if anything, because of the nature of PNB's franchise territory compared to the entire Bell System.

^{1/} No attempt was made to evaluate whether such price reductions, either for the independents or for the Bell System, would constitute "predatory" pricing such that antitrust issues would be raised, or whether such pricing responses would meet a standard of full-cost allocation. They are simply the minimum price reductions deemed necessary to prevent further erosion of market shares. For example, the witness for Central Telephone testified that even using a discounted cash flow analysis, some of its subscribers could save at least 20 percent over a ten year period by going interconnect. In addition, in a recent full-page advertisement by the North American Telephone Association in the Washington Post, Sunday, October 14, 1973, the Association asserted that "97 percent of the business customers who switched to interconnection were motivated by cost savings", and further that "using a popular method of analysis, one comparative study computes annual savings [to business subscribers] on a range of non-Bell equipment at approximately 19%." Thus, the price reductions assumed here are believed to reasonably estimate what would be required to prevent further erosion of telco market shares.

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PNB's data showed cumulative annual revenue losses from PBX systems of \$796,611 by 1973, which is 5 percent of PNB's 1973 annual PBX revenues of \$15,263,000. Cumulative annual key system revenue losses by 1973 totaled \$437,393, which is 1 percent of PNB's annual 1973 key system revenues of \$39,341,000.

These revenue relationships, in turn, were used to estimate interconnect penetration levels throughout the Bell System, and resulted in a cumulative annual PBX revenue loss for the Bell System by 1973 of \$53 million, compared to a cumulative annual key system revenue loss of \$11 million.

However, some method had to be utilized to project the growth of interconnected units and to compare it to a "baseline" market projection in order to determine relative market shares. This was done in the following manner:

First, the total 1973 PBX and key system markets were estimated on a revenue basis by adding the PBX revenue loss of \$53 million to the Bell System PBX revenue of \$1065 million to yield a total market of \$1118 million, and the \$11 million key system revenue loss was added to the Bell System KTS revenues of \$1136 million to yield a total KTS market of \$1147 million. At the aggregate Bell System average 1973 annual revenue for PBX and key systems, the cumulative revenue losses translate into 8,000 interconnected PBX systems and 16,000 interconnected key systems in service throughout the Bell System in 1973.^{2/}

^{2/} The data submitted by the telephone companies indicate that, particularly in the case of key systems, the interconnected units tend to be larger than average. However, for purposes of this projection, measurements were made as though the interconnected units, on the average, are the same as telco units.

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Data provided by the Bell System showed that its total annual PBX revenues for the ten year period 1964 through 1973 grew at the compound average annual rate of 10.0 percent, with a maximum annual growth rate during that period of 13.0 percent and a minimum rate of 4.9 percent. Since the interconnect level during this period of time was minimal or non-existent, these growth rates were used in projecting the minimum and maximum baseline PBX markets during the forecast period. This was done by projecting the total PBX market in 1973 (\$1118 million), as derived above, at the compound average growth rate of 10.0 percent for the years 1974 through 1984 and projecting the average result reached for each of those years at the alternative rates of 4.9 and 13.0 percent to determine the minimum and maximum estimated revenue level, respectively, for the following year. The same procedure was used in the case of key systems, which had a compound average annual growth rate of 10.6 percent during the ten year period of 1964 through 1973, a maximum annual growth during that period of 14.0 percent and a minimum annual growth of 6.3 percent.

The results of these projections are shown below in Table C-1.

Under the first assumption posited by the Committee for its analysis, namely, that PBX and key system prices are not lowered to meet competition, the minimum interconnect penetration would

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TABLE C-1

PROJECTED MINIMUM AND MAXIMUM BELL
SYSTEM BASELINE PBX AND KTS MARKETS

\$ Million Year	PBX		KTS	
	Minimum Baseline Market	Maximum Baseline Market	Minimum Baseline Market	Maximum Baseline Market
1974	1173	1263	1219	1308
1975	1290	1390	1349	1446
1976	1419	1529	1491	1599
1977	1561	1682	1650	1769
1978	1717	1850	1824	1957
1979	1889	2035	2018	2164
1980	2078	2238	2232	2593
1981	2285	2462	2468	2647
1982	2514	2708	2750	2928
1985	2765	2979	3019	3238
1984	3042	3277	3339	3581

occur under maximum baseline market growth conditions, combined with the minimum level of interconnect internal growth. Having made the maximum baseline market projection above, it was then necessary to project interconnect growth, i.e., annual telco revenue losses due to interconnection. This, in turn, is a product of two elements--the number of interconnected units in service and the average annual revenue per unit. Since interconnected units

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are normally sold to the subscriber, the level of interconnection was estimated by projecting total estimated units in service during the forecast period and multiplying these units by the projected average revenue per unit that would have been earned had the telephone company provided the equipment. Again, the minimum level of interconnect growth occurs when the minimum projected units in service is multiplied by the minimum projected average revenue per unit. Subtracting these totals from the projected maximum base line PBX and KTS markets, in turn, yields the Bell System projected PBX and KTS revenues used to derive the Committee's estimate of subsidy loss due to interconnection.

Estimating the projected growth of interconnected units in service, of course, necessarily is a matter of judgment, since by definition it is the prediction of an unknown future event. However, PBX and KTS revenues have historically grown at a fairly high rate for the Bell System, and in view of the much lower base of the interconnect industry, it is reasonable to predict that its compound average annual growth rate will be substantially higher than Bell's historical growth rate. In addition, the limited experience of the telephone companies submitting information to the Committee shows extremely high growth rates for interconnected units. For example, Continental's experience showed growth rates of 35 percent to 57 percent annually, Central Telephone's information showed growth rates ranging from 75 to 500 percent for PBX and key systems, and Pacific Northwest Bell's information showed growth rates of 24 to 300 percent increases for interconnected PBX and key systems in service. In addition, although

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General did not submit specific data, it submitted graphs depicting the number of PBX and key systems lost since 1970 as increasing very sharply.

Clearly, the low level of interconnect activity accounts for the inordinately high growth rates shown by the historical data, and these rates in turn can be expected to taper off substantially during the forecast period. However, once sold, the interconnected unit may be generally expected to remain in service throughout the forecast period, so that the interconnect industry should not be faced with a significant amount of resale to existing customers during that time. Furthermore, existing price levels of the telephone companies include a substantial maintenance cost factor, in addition to an artificially high contribution to overhead and common costs, particularly in the case of key systems, which make outright purchase of equipment deceptively appealing to many customers in comparison to monthly rental charges paid to the telephone company. Thus, the level of interconnection is expected to continue to grow at a high rate during the forecast period.

After balancing of the foregoing factors, a 20 percent minimum average compound annual growth rate was used to project interconnected PBX units in service, and a 35 percent minimum annual compound average growth rate was used to project interconnected key systems in service. In both cases, the average growth rates were skewed to show higher rates in the near term and substantially lower rates towards the end of the forecast period. The projected minimum interconnected PBX and key systems in service during the forecast period are set

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forth below in Table C-2.

The growth in Bell's average annual PBX and KTS revenue per unit was then computed by dividing total revenues by total units for the years 1963 through 1973, from which the compound annual growth rates were computed. These data show that Bell's average annual revenue per PBX system increased by a compound average annual rate of 10.8 percent from 1964 through 1973, with a minimum growth rate of 6.8 percent occurring during that time. Key systems showed a compound average annual growth rate of 8.8 percent during that same time period, with a minimum growth rate of 1.9 percent occurring. Projections of Bell's minimum average annual revenue per PBX and key system were then made using the same procedure as described above for the baseline market projection. By multiplying the minimum projected interconnected units in service times the minimum projected average annual revenue per system, it was possible to estimate minimum projected interconnect market levels, i.e., Bell revenue losses, during the forecast period, as shown below in Table C-2.

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TABLE C-2

DERIVATION OF PROJECTED MINIMUM PBX AND
KTS INTERCONNECT (I/C) LEVELS

Year	PBX			KTS		
	I/C PBX's in Service (000)	Min. Ave. Rev./Unit (\$)	Min. PBX I/C Level (\$ Million)	I/C KTS in Service (000)	Min. Ave. Rev./Unit (\$)	Min. KTS I/C Level (\$ Million)
1974	11	7434	82	24	703	17
1975	14	8237	115	38	750	29
1976	17	9127	156	57	799	46
1977	21	10113	212	81	852	69
1978	26	11205	291	109	908	99
1979	30	12415	372	142	968	137
1980	35	13756	481	180	1032	186
1981	41	15241	625	225	1100	248
1982	47	16887	793	277	1172	325
1983	54	18711	1010	338	1250	423
1984	61	20732	1265	409	1332	545

In addition, by subtracting the minimum annual interconnect market levels, i.e., Bell revenue losses, from the maximum projected baseline markets shown in Table C-1, the relative Bell/interconnect market shares at the minimum level of interconnect penetration can be estimated, as shown below in Tables C-3 and C-4.

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TABLE C-3

PROJECTED BELL/INTERCONNECT PBX MARKET
SHARES AT MINIMUM INTERCONNECT PENETRATION

Year	Maximum Baseline PBX Market (\$ Million)	Interconnect		Bell System	
		Minimum PBX Rev.* (\$ Million)	Market Share (%)	Maximum PBX Rev. (\$ Million)	Market Share (%)
1974	1263	82	6	1181	94
1975	1390	115	8	1275	92
1976	1529	156	10	1373	90
1977	1682	212	13	1470	87
1978	1850	291	16	1559	84
1979	2035	372	18	1663	82
1980	2238	481	21	1757	79
1981	2462	625	25	1838	75
1982	2708	793	29	1915	71
1983	2979	1010	34	1969	66
1984	3277	1265	39	2012	61

TABLE C-4

PROJECTED BELL/INTERCONNECT KTS MARKET
SHARES AT MINIMUM INTERCONNECT PENETRATION

Year	Maximum Baseline KTS Market (\$ Million)	Interconnect		Bell System	
		Minimum KTS Rev.* (\$ Million)	Market Share (%)	Maximum KTS Rev. (\$ Million)	Market Share (%)
1974	1308	17	1	1291	99
1975	1446	29	2	1417	98
1976	1599	46	3	1553	97
1977	1769	69	4	1700	96
1978	1957	99	5	1858	95
1979	2164	137	6	2027	94
1980	2393	186	8	2207	92
1981	2647	248	9	2399	91
1982	2928	325	11	2603	89
1983	3238	423	13	2815	87
1984	3581	545	15	3036	85

* Denotes minimum revenue loss to Bell as measured by its tariffs
and not revenues actually received by interconnect industry.

Moreover, since the market levels to be achieved by the interconnect industry have been estimated in the equivalent of revenue losses to the Bell System, the amount of exchange service subsidy lost as a result of interconnection can be projected by measuring the amount of such revenues, at 1973 levels, which would have been contribution to overhead and common costs, and which would have been credited to the exchange through the process of jurisdictional separations. 3/

Data submitted by Pacific Northwest Bell demonstrated these relationships to be 45 percent in the case of PBX's and 42 percent in the case of key systems. Therefore, by applying these percentages to the projected revenue losses for the entire Bell System, projected minimum subsidy losses (i.e., the amount of costs which must be shifted to non-interconnected subscribers) can be derived for the forecast period, as shown below in Table C-5.

The projected subsidy losses for the independent industry were based upon projected units in service, revenues and expenses provided by the United Telephone System for key systems, small PBX's and large PBX's for the years 1978, 1983 and 1988, including actual data for 1973. United's projection was based upon the assumption that interconnection remained at a minor level, and it shows the comparative effects on contribution levels if interconnection were to achieve a 10 percent and 30 percent penetration.

3/ For an explanation of why these portions of the revenue losses constitute a "subsidy" of exchange service, see the report, pp. 36-40 , supra.

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TABLE C-5

MINIMUM PROJECTED BELL SYSTEM EXCHANGE
SERVICE SUBSIDY LOSSES DUE TO INTERCONNECTION

\$ Million Year	PBX		KTS		Total Min. Bell System Subsidy Loss
	Minimum Revenue Loss	Minimum Subsidy Loss	Minimum Revenue Loss	Minimum Subsidy Loss	
1974	82	37	17	7	44
1975	115	52	29	12	64
1976	156	70	46	20	90
1977	212	95	69	29	124
1978	291	131	99	42	173
1979	372	168	137	58	226
1980	481	216	186	78	294
1981	625	281	248	104	385
1982	793	357	325	137	494
1983	1010	455	423	178	633
1984	1265	570	545	229	799

In view of the assumptions made in United's projection, its projected revenues and expenses were used as the baseline market for purposes of this analysis. However, its breakdown treated only contribution levels and did not include the effects of toll settlements. Therefore, these items were included herein by applying the average factors computed by General Telephone from its own records, viz., 17 percent of annual costs for interstate toll and 21 percent of annual costs for intrastate toll, and total baseline subsidy levels for 1973, 1978 and 1983 could be projected as shown on Table C-6.

TABLE C-6
PROJECTED UNITED SYSTEM
BASELINE SUBSIDY LEVELS

\$ Thousand	Overhead & Common Contribution	Interstate Toll Allocation	Intrastate Toll Allocation	Total Subsidy Level
1973				
KTS	8900	1544	1907	12351
Sm. PBX	6067	1433	1770	9270
Lg. PBX	3935	1948	2406	8289
Total	18902	4925	6083	29910
1978				
KTS	15038	2484	3069	20591
Sm. PBX	9418	1919	2371	13708
Lg. PBX	5227	2845	3514	11586
Total	29683	7248	8954	45885
1983				
KTS	19503	3519	4347	27369
Sm. PBX	10221	2696	3330	16247
Lg. PBX	5307	4123	5093	14523
Total	35031	10338	12770	58139

In addition, by consolidating the revenue and expense data for small and large PBX's and applying the minimum Bell System interconnect market penetration levels developed in Tables C-3 and C-4, projected subsidy levels at minimum interconnect penetration were derived for the years 1978 and 1983, as shown in Table C-7.

Finally, annual subsidy losses were estimated by projecting a constant absolute increase in baseline subsidy levels and in subsidy levels at minimum interconnect penetration for the years

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TABLE C-7
PROJECTED UNITED SYSTEM SUBSIDY
LEVELS AT MINIMUM INTERCONNECT PENETRATION

\$ Thousand	Market	Overhead	Interstate	Intrastate	Total
1978	Share (%)	& Common	Toll	Toll	Subsidy
		Contribution	Allocation	Allocation	Level
KTS	95	14271	2358	2912	19541
PBX	84	12346	4016	4961	21323
Total		26617	6374	7873	40864
<u>1983</u>					
KTS	87	16948	3058	3777	23783
PBX	66	10264	4507	5568	20339
Total		27712	7565	9345	44122

1973-1978 and for the years 1978-1984, with the subsidy loss calculated as the difference between the two. In addition, since United has approximately two percent of the total telephones in service, compared to 17 percent for the independents as a whole, the projected subsidy loss for the independent industry was calculated by multiplying the results for United by eight. These projections are shown in Table C-8, which, when combined with Table C-5, produce the data found under the appropriate headings in Table 5 of the report.

Having derived the basic projections set forth above, the projection of subsidy losses when prices are lowered to retain market shares becomes much simpler. In the case of the Bell System, the minimum subsidy loss occurs under conditions of

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TABLE C-8

PROJECTED MINIMUM INDEPENDENT INDUSTRY
SUBSIDY LOSSES DUE TO INTERCONNECTION

\$ Million Year	United Baseline Subsidy Level	United Subsidy at Minimum I/C Level	Minimum United Subsidy Loss	Minimum Indep. Ind. Subsidy Loss
1974	33.105	32.101	1.004	8
1975	36.300	34.292	2.008	16
1976	39.495	36.482	3.013	24
1977	42.690	38.673	4.017	32
1978	45.885	40.864	5.021	40
1979	48.336	41.516	6.820	55
1980	50.787	42.167	8.620	69
1981	53.237	42.819	10.418	83
1982	55.688	43.470	12.218	98
1983	58.139	44.122	14.017	112
1984	60.590	44.774	15.816	127

minimum baseline market growth. (See Table C-1). Thus, the subsidy loss is computed by projecting the baseline subsidy levels, i.e., 45 percent of revenue for PBX's and 42 percent for key systems, at the minimum baseline market growth and subtracting from the baseline subsidy the subsidy level that results when prices are lowered in the manner described above.

Since the price reductions are forecast to occur over a five-year period, the subsidy loss at the maximum price reduction is computed for the years 1978-1984. For the years 1974-1978, subsidy levels were projected to increase in constant absolute increments, which were then subtracted from the baseline subsidy levels to

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determine losses. To retain current market shares, the Bell System is projected to retain 95 percent of the baseline PBX market and 99 percent of the baseline KTS market. The results are shown below in Tables C-9 and C-10.

TABLE C-9

PROJECTED MINIMUM BELL SYSTEM EXCHANGE SERVICE
SUBSIDY LOSSES DUE TO COMPETITIVE PBX PRICE REDUCTIONS

\$ Million Year	Baseline PBX Market	Baseline Subsidy Level	Bell System PBX Revenue	Bell System Subsidy Level	Minimum PBX Subsidy Loss
1974	1173	528	1114	499	29
1975	1290	581	1226	517	64
1976	1419	639	1348	535	104
1977	1561	702	1483	553	149
1978	1717	773	1631	571	202
1979	1889	850	1795	628	222
1980	2078	935	1974	691	244
1981	2285	1028	2171	760	268
1982	2514	1131	2388	836	295
1983	2765	1244	2627	919	325
1984	3042	1369	2890	1012	357

TABLE C-10
 PROJECTED MINIMUM BELL SYSTEM EXCHANGE SERVICE
 SUBSIDY LOSSES DUE TO COMPETITIVE KTS PRICE REDUCTIONS

\$ Million Year	Baseline KTS Market	Baseline Subsidy Level	Bell System KTS Revenue	Bell System Subsidy Level	Minimum KTS Subsidy Loss
1974	1219	512	1207	480	32
1975	1349	567	1336	482	85
1976	1491	626	1476	484	142
1977	1650	693	1634	486	207
1978	1824	766	1806	488	278
1979	2018	848	1998	539	309
1980	2232	937	2210	597	340
1981	2468	1037	2443	660	377
1982	2730	1147	2703	730	417
1983	3019	1268	2989	807	461
1984	3339	1402	3306	893	509

Subsidy losses for United and the independent industry in the situation of competitive PBX and KTS price reductions were also projected by computing subsidy levels for the years 1978 and 1983 on the basis of the price reduction assumptions set forth above and projecting constant absolute subsidy level increases for the years 1973-1978 and 1978-1984. When subtracted from the previously derived baseline subsidy levels and multiplied by eight, the result is the minimum projected subsidy losses for the independent industry. In turn, when these data are combined with the data in Tables C-9 and C-10, the data used for this portion of Table 5 in the report are derived.

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These computations are shown below in Tables C-11 and C-12.

TABLE C-11

PROJECTED UNITED SYSTEM SUBSIDY
LEVELS WITH COMPETITIVE PRICE REDUCTIONS

\$ Thousand	% Price Reduction	Overhead & Common Contribution	Interstate Toll Allocation	Intrastate Toll Allocation	Total Subsidy Level
1978					
KTS	31	5930	2484	1907	10321
Sm. PBX	25	4142	1919	1770	7831
Lg. PBX	9	3294	2845	2406	8545
Total		13366	7248	6083	26697
1983					
KTS	28	8040	3519	3069	14628
Sm. PBX	19	5216	2696	2371	10283
Lg. PBX	3	4434	4123	3514	12071
Total		17690	10338	8954	36982

TABLE C-12

PROJECTED MINIMUM INDUSTRY EXCHANGE SERVICE SUBSIDY
LOSSES DUE TO COMPETITIVE PBX AND KTS PRICE REDUCTIONS

\$ Million Year	United Baseline Subsidy	Subsidy With Price Reduction	United Subsidy Loss	Indep. Ind. Subsidy Loss	Min. Total Industry Subsidy Loss
1974	33.105	29.267	3.838	31	92
1975	36.300	28.625	7.675	61	210
1976	39.495	27.982	11.513	92	338
1977	42.690	27.340	15.350	123	479
1978	45.885	26.697	19.188	154	634
1979	48.336	28.754	19.582	157	688
1980	50.787	30.811	19.976	160	744
1981	53.237	32.868	20.369	163	808
1982	55.688	34.925	20.763	166	878
1983	58.139	36.982	21.157	169	955
1984	60.590	39.039	21.551	172	1038

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Several other projections were made in the course of the Committee's analysis and will be explained below. The number of residential customers used to compute the annual interconnect and specialized common carrier impact in Figure 3 is the number of residential main stations in service projected for the industry during the forecast period. This projection extrapolates the forecast made by Daniel F. Hodes and Joseph F. Citarella in the 1973 TE&M Directory, p. 38 et seq., through 1984 at the same compound average annual growth rates shown therein, and the data derived is set forth below in Table C-13.

TABLE C-13
PROJECTED RESIDENTIAL MAIN STATION GROWTH

Millions <u>Year</u>	<u>Total Industry</u>	<u>Independents</u>	<u>Bell System</u>
1973	63.7	13.1	50.6
1974	65.4	13.6	51.8
1975	67.2	14.1	53.1
1976	69.0	14.6	54.4
1977	70.9	15.2	55.7
1978	72.8	15.7	57.1
1979	74.7	16.3	58.4
1980	76.8	16.9	59.9
1981	78.8	17.5	61.3
1982	81.0	18.2	62.8
1983	83.2	18.9	64.3
1984	85.4	19.6	65.8

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Dividing the projected minimum annual cost of interconnection and specialized common carriers, as shown in Table 1 of the report, by the projected industry residential main stations in service (Table C-13) produces the projected minimum annual cost per residential customer depicted in Figure 3 of the report. These computations are made in Tables C-14 and C-15, below.

TABLE C-14

DERIVATION OF INTERCONNECT AND SCC COST PER RESIDENTIAL CUSTOMER, ASSUMING COMPETITIVE PBX AND KTS PRICE REDUCTIONS

Year	Minimum Annual Industry Cost (\$M)	Projected Industry Residential Mains (M)	Minimum Annual Cost Per Res. Customer	Minimum Cumulative Cost Per Res. Customer
1974	100	65.4	\$ 1.50	\$ 1.50
1975	237	67.2	3.50	5.00
1976	398	69.0	5.80	10.80
1977	576	70.9	8.10	18.90
1978	778	72.8	10.70	29.60
1979	892	74.7	11.90	41.50
1980	1014	76.8	13.20	54.70
1981	1152	78.8	14.60	69.30
1982	1305	81.0	16.10	85.40
1983	1476	83.2	17.70	103.10
1984	1660	85.4	19.40	122.50

TABLE C-15

DERIVATION OF INTERCONNECT AND SCC COST PER RESIDENTIAL CUSTOMER, ASSUMING NO COMPETITIVE PBX AND KTS PRICE REDUCTIONS

Year	Minimum Annual Industry Cost (\$M)	Projected Industry Residential Mains (M)	Minimum Annual Cost Per Res. Customer	Minimum Cumulative Cost Per Res. Customer
1974	60	65.4	\$.90	\$.90
1975	107	67.2	1.60	2.50
1976	174	69.0	2.50	5.00
1977	253	70.9	3.60	8.60
1978	357	72.8	4.90	13.50
1979	485	74.7	6.50	20.00
1980	633	76.8	8.20	28.20
1981	812	78.8	10.30	38.50
1982	1019	81.0	12.60	51.10
1983	1266	83.2	15.20	66.30
1984	1548	85.4	18.10	84.40

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The revenue bases used to project the minimum increase in rates required to offset the cost of interconnection and SCC competition (Tables 2-4, inclusive, in the report) are derived from Bell System data furnished to the Committee, extrapolated for the industry by the approximate percentage which Bell telephones in service bear to the total.

The estimated business line and residential exchange revenue projected in Table 2 of the report is the sum of the maximum projected total main station revenues and PBX line revenue for the forecast period, extrapolated by a weighted percentage which Bell residential main stations and business telephones are forecast to bear to the total industry. Again, the forecast was based on the analysis made by Hodes and Citarella in the 1973 TE&M Directory, supra.

Since 1966, the first year for which information was provided, total Bell System main station revenues have increased at a compound average annual rate of 7.0 percent, with the largest single annual rate during that time being 10.1 percent. Bell System PBX line revenue for 1973 was approximately \$290 million, and is forecast to grow at the same rate as the baseline PBX vertical service revenue. Thus, computing the maximum forecast growth of these two revenue items, using the same procedure explained previously, and extrapolating them to the industry as a whole produces the results shown below in Table C-16 and reflected in the report in Table 2.

TABLE C-16

DERIVATION OF PROJECTED MAXIMUM
BUSINESS LINE AND RESIDENTIAL EXCHANGE REVENUE

\$ Million Year	Maximum Bell Main Station Revenue	Maximum Bell PBX Line Revenue	Bell Weighting Factor (%)	Maximum Industry Revenue
1974	5692	328	80	7525
1975	6091	360	80	8064
1976	6517	397	80	8643
1977	6973	436	80	9261
1978	7461	480	80	9926
1979	7984	528	80	10640
1980	8542	581	80	11404
1981	9140	639	80	12224
1982	9780	702	80	13103
1983	10465	775	79	14225
1984	11197	850	79	15249

The business line revenue estimates used in Table 3 of the report are simply the maximum projected Bell System business main revenues and PBX line revenues, extrapolated for the industry by the ratio which Bell business telephones in service are estimated to bear to the total during the forecast period. Since 1966, business main station revenues have grown at a compound average annual rate of 8.1 percent, with the highest annual rate during that time at 12.6 percent. Derivation of the data is set forth below in Table C-17.

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TABLE C-17

DERIVATION OF PROJECTED MAXIMUM
BUSINESS LINE REVENUE

Year	Maximum Bell Bus. Main Revenue	Maximum Bell PBX Line Revenue	Bell Weighting Factor	Maximum Industry Revenue
1974	1413	528	84	2075
1975	1528	560	84	2248
1976	1651	597	85	2467
1977	1785	636	85	2676
1978	1930	680	85	2904
1979	2086	728	85	3149
1980	2255	781	85	3381
1981	2438	839	85	3607
1982	2635	902	85	4020
1983	2848	975	82	4416
1984	3079	1050	82	4761

Lastly, the residential exchange revenues used in Table 4 of the report are the maximum projected Bell System residential main revenues extrapolated for the industry by the ratio which Bell residential mains in service are estimated to bear to the total during the forecast period. Since 1966, residential main station revenues have grown at a compound average annual rate of 6.6 percent, with the highest annual rate during that time at 9.5 percent. Derivation of the data is set forth below in Table C-18.

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TABLE C-18

DERIVATION OF PROJECTED MAXIMUM
RESIDENTIAL EXCHANGE REVENUE

\$ Million	Maximum Bell Res. Main	Bell Weighting Factor	Maximum Industry
<u>Year</u>	<u>Revenue</u>	<u>(%)</u>	<u>Revenue</u>
1974	4279	79	5416
1975	4562	79	5775
1976	4863	79	6156
1977	5184	79	6562
1978	5526	78	7085
1979	5890	78	7551
1980	6279	78	8050
1981	6693	78	8581
1982	7135	78	9147
1983	7606	77	9878
1984	8108	77	10530

DERIVATION OF THE SPECIALIZED COMMON CARRIER ESTIMATES

The estimated impact of specialized common carrier competition set forth in the report centers around the Committee's conclusion that the minimum impact that is likely to occur is that the historical growth of the interstate SLU factor will be siphoned off within five years, due to the shifting of large MTS and WATS users from the toll network to private line service--either Bell's private line service or that of the SCC's.

There is little doubt that, both from a revenue and growth standpoint, interstate MTS and WATS have been prime performers for the Bell system in recent years. Given their historical growth and revenue base, the prospect of them experiencing a net decline in messages or revenues as a result of SCC competition is clearly remote.

However, they have historically grown to such an extent that they have outpaced the relative growth of intrastate services, with the result that the relative SLU factor used for jurisdictional separations purposes has gradually been increasing. Analysis of data submitted by the Bell System (Bell Exhibit 3, Attachment B) shows that the nationwide SLU factor for 1973 was 5.74 percent. In turn, the Committee has published the nationwide SLU factors for 1972 and 1971 in its last two annual reports, which were 5.47 percent and 5.17 percent, respectively.¹ In

1 / See 85th NARUC Annual Convention Proceedings, p. 453 (1973) and 84th NARUC Annual Convention Proceedings, p. 436 (1972).

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turn, these increases have resulted in the nationwide SPF used for allocating local plant costs to interstate service increasing from 17.01 percent in 1971 to 18.00 percent in 1972 and 18.88 percent in 1973.

Interstate allocations of local plant costs are an extremely vital method of holding down the cost of intrastate service, as evidenced by the fact that during 1973 approximately \$2.19 billion in revenue requirements were allocated to interstate service. Had the SLU factor not grown from 1972 to 1973, however, the interstate allocation would only have been approximately \$2.09 billion, resulting in intrastate ratepayers having to pay an additional \$100 million in the form of increased rates. Clearly, therefore, a seemingly insignificant retardation of the growth of the SLU factor results in millions of additional dollars which must come out of the pockets of the intrastate ratepayers.

A contention vigorously advanced by Bell witness at the hearing was that the lower price threshold of PLS due to SCC "cream-skimming" is resulting and will continue to result in significant diversion of MTS and WATS traffic to SCC PLS, absent competitive repricing by Bell. In turn, the competitive response adopted by Bell (known as the "high-low" tariff now awaiting FCC approval) has been to generally lower PLS prices by a significant amount along routes proposed to be served by the SCC's and to increase prices along routes which the SCC's

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are generally not likely to enter.² /

Since, as contended by Bell, the lower price threshold of SCC PLS has a significant revenue drainage effect on interstate MTS and WATS, it necessarily follows that similar or lower price thresholds established by Bell along the same routes will have an equally significant--if not more so, in view of Bell's substantially greater revenue base--drainage effect on MTS and WATS. By the same token, the drainage is certain to occur whether or not Bell's High-Low or similar tariff is approved, since the only difference is whether the MTS and WATS traffic is diverted to Bell's PLS or an SCC's PLS.

Under all of these circumstances, the Committee believes that the absolute minimum impact which SCC competition will have on intrastate telephone subscribers is to siphon off the natural growth of the SLU factor over a period of time, under current separations procedures, thereby shifting costs which should have been allocated to interstate service back onto the shoulders of the intrastate ratepayers.

Moreover, although the Committee believes that the price effect of PLS alone will produce the results forecast herein, it should be further pointed out that granting the SCC's access

² / Whether such a tariff is justified by cost considerations or otherwise is irrelevant to this discussion, since it is the objective fact of significant price reductions which is likely to produce the results the Committee is concerned with herein.

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to the telephone industry's foreign exchange network will have the effect of further increasing the relative growth of exchange service usage vis-a-vis interstate toll, thereby tending to reduce the growth of the interstate SLU. The reason for this is explained in the report at pp.70-71 and will not be repeated herein. However, this recent development clearly shows that the impact forecast herein is an absolute minimum level that can be reasonably expected.

To quantify the economic impact of these phenomena, the Committee has projected that the "spread" which will occur in the interstate SLU between the baseline growth and the growth with SCC competition will gradually increase over the forecast period until it reaches 1.11 percent by 1984. This result is derived by estimating that the normal SLU increase over the forecast period would be .12 percent per year, and that with SCC competition the growth will be completely stopped by 1978. The resulting interstate SLU factors and SPF's are shown below in Table D-1.

In addition, since total annual local subscriber plant costs should increase as a function of growth in main stations, which has been in the range of 3-4 percent annually, and in investment, which has been in the 10-12 percent range annually, a composite average annual compound growth rate of seven percent was used to project the increase in annual local subscriber plant costs during the forecast period. Accordingly, by calculating the difference in total

TABLE D-1

PROJECTED REDUCTION IN INTERSTATE
SLU AND SPF DUE TO SCC COMPETITION

Year	Baseline		With SCC Competition		"Spread" in SLU (%)
	Interstate SLU (%)	Interstate SPF (%)	Interstate SLU (%)	Interstate SPF (%)	
1974	5.86	19.28	5.83	19.18	0.03
1975	5.98	19.68	5.89	19.39	0.09
1976	6.10	20.07	5.92	19.47	0.18
1977	6.22	20.47	5.94	19.55	0.28
1978	6.34	20.85	5.95	19.58	0.39
1979	6.46	21.25	5.95	19.58	0.51
1980	6.58	21.65	5.95	19.58	0.63
1981	6.70	22.04	5.95	19.58	0.75
1982	6.82	22.44	5.95	19.58	0.87
1983	6.94	22.84	5.95	19.58	0.99
1984	7.06	23.22	5.95	19.58	1.11

annual local plant costs allocated to interstate service, the "cost" of SCC competition to intrastate ratepayers in the form of increased revenue requirements can be projected for the forecast period, as shown in Table D-2.3/

5/ It should be noted at this point that the interstate SLU varies significantly from study area to study area and may be substantially greater than or less than the nationwide SLU. Thus, since PLS price reductions--whether due to SCC entry or Bell repricing--are likely to occur on a selective basis, the extent of the increase in costs may be inordinately high for some areas and insignificant for others. As a generalization, however, it would appear that high interstate MTS and WATS usage areas likely are the ones which will experience relatively the greatest traffic diversion, and consequently the greatest economic impact.

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TABLE D-2

PROJECTED MINIMUM COST OF SCC COMPETITION
TO INTRASTATE TELEPHONE SERVICE SUBSCRIBERS

\$ Million Year	Local Plant Industry Costs	Baseline		With SCC Competition		Annual State Cost of SCC Comp.
		Interstate SPF (%)	Interstate Allocation	Interstate SPF (%)	Interstate Allocation	
1974	12412	19.28	2393	19.18	2381	12
1975	13281	19.68	2614	19.39	2575	39
1976	14210	20.07	2852	19.47	2767	85
1977	15205	20.47	3112	19.55	2973	139
1978	16270	20.85	3392	19.58	3186	206
1979	17408	21.25	3699	19.58	3408	291
1980	18627	21.65	4033	19.58	3647	386
1981	19931	22.04	4393	19.58	3902	491
1982	21326	22.44	4786	19.58	4176	610
1983	22819	22.84	5212	19.58	4468	744
1984	24416	23.22	5669	19.58	4781	888

The total State cost of SCC competition as projected by the Committee, of course, includes a portion that will be borne by the exchange ratepayer and a portion that will be borne by the State toll ratepayer. However, there is no way to know exactly how the costs will be allocated, since the State commission has discretionary authority over rate design modifications, and since the mere reduction of the interstate SLU does not indicate how the relative exchange and State toll SLU's are affected vis-a-vis each other.

General Telephone advised the Committee that its interstate toll allocation factor is approximately 17 percent and that its intrastate toll allocation factor is approximately 21 percent,

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which means that its exchange factor is approximately 62 percent. Therefore, the allocation of SCC competition costs between exchange service and State toll was made by taking the approximate percentage which the exchange factor bears to the sum of the exchange and State toll factors (i.e., $62 \div 83 = 75$ percent. However, 70 percent was used in order to be conservative).

The results are shown in Table 6 of the report, p. 35.

Finally, the report also estimates, for comparative purposes, the magnitude of cost-shifting to intrastate exchange and toll which would occur if needed changes in separations procedures were not made due to the squeeze on interstate intercity revenues created by SCC competition. The estimates used in that discussion were derived simply by substituting the proposed formula for computing the baseline SPF for the formula used in Table D-1, leaving the projected SLU factors unchanged. Table D-3 shows the derivation of the estimated annual State costs, and Table D-4 allocates the State costs between exchange and toll in the same manner as discussed above for Table 6 in the report.

TABLE D-3

PROJECTED ANNUAL INTRASTATE COST OF SCC
COMPETITION IF SEPARATIONS PROPOSAL IS NOT ADOPTED

\$ Million	Local Plant Industry Costs	Baseline		With SCC Competition		Annual State Cost of SCC Comp.
		Interstate SPF (%)	Interstate Allocation	Interstate SPF (%)	Interstate Allocation	
1974	12412	20.86	2589	19.18	2381	268
1975	13281	21.29	2828	19.39	2575	253
1976	14210	21.72	3086	19.47	2767	319
1977	15205	22.15	3368	19.55	2973	395
1978	16270	22.57	3672	19.58	3186	486
1979	17408	23.00	4004	19.58	3408	596
1980	18627	23.42	4362	19.58	3647	715
1981	19931	23.85	4754	19.58	3902	852
1982	21326	24.28	5178	19.58	4176	1002
1983	22819	24.71	5639	19.58	4468	1171
1984	24416	25.13	6156	19.58	4781	1355

TABLE D-4

COMPARATIVE STATE EXCHANGE AND TOLL COST OF
SCC COMPETITION IF SEPARATIONS PROPOSAL IS NOT ADOPTED

\$ Million	Annual State Cost of SCC Com- petition	Cumulative State Cost of SCC Com- petition	Annual Exch. Cost of SCC Com- petition	Cumulative Exch. Cost of SCC Com- petition	Annual State Toll Cost of SCC Competition	Cumulative State Toll Cost of SCC Competition
1974	208	208	146	146	62	62
1975	253	461	177	323	76	138
1976	319	780	223	546	96	234
1977	395	1175	277	823	118	352
1978	486	1661	340	1163	146	498
1979	596	2257	417	1580	179	677
1980	715	2972	504	2081	214	891
1981	852	3824	596	2677	256	1147
1982	1002	4826	701	3378	301	1448
1983	1171	5997	820	4198	351	1799
1984	1355	7352	949	5147	406	2205

EXHIBIT 9a.—Comments by John S. Cosgrove on NARUC Study

AN ANALYSIS OF THE NARUC INVESTIGATION INTO THE ECONOMIC IMPACT OF INTERCONNECTION OF SUBSCRIBER-PROVIDED EQUIPMENT TO THE PUBLIC SWITCHED TELEPHONE NETWORK

OPENING COMMENTS

The NARUC Study is a classic example of an organization with preconceived conclusions, (i.e. competition for key and PBX systems is economically harmful and will cause increased residential rates), asking the various telephone companies (with obvious vested interests), to support this conclusion. In this way, NARUC hopes to provide some semblance of credibility for their study. Based on my experience, working conclusions and numbers backwards is nothing new to the telephone companies, particularly the Bell System. This point is clearly shown on Page C-3, Note 1 when NARUC states that the price reductions "are simply the minimum price reductions necessary to prevent further erosion of (TELCO) market shares . . . whether (or not) such pricing responses would meet a standard of full-cost allocation." In subsequent comments, I will attempt to demonstrate that the underlying assumptions on which the NARUC conclusions are based are incomplete and inaccurate making the study equally spurious.

ECONOMIC HARM FROM PRICE REDUCTIONS OF "HIGHLY PROFITABLE" KEY AND PBX RATES

This erroneous assumption is based on the generalization that Key and PBX-system rates prior to competition were higher than required to cover full revenue requirements on a fully allocated basis (Page C-8). This error can be shown in several cases. For example, when Michigan Bell restructured its Key and PBX rates in 1973 to reflect "actual costs", overall Key system and PB Xsystem rates were increased by approximately 8% (Bell witness Hamming Direct, Exhibit 46 of 48). This is further supported in the statement by Bell witness Hamming in that restructuring proceeding (Case No. 4293) that . . .

"PBX and Key rates have not been increased since 1955 except in Case U-3838 concluded in April, 1972. This was insufficient to cover today's costs and, therefore, one reason for restructuring PBX and Key rates is to bring them up to that level." (Hamming Direct, Page 3)

In fact, the only question concerning Michigan Bell's Key and PBX rates as they are currently being tested in Ingham County Circuit Court is whether or not Michigan Bell is fully covering the costs of providing these services and making up the difference or subsidizing them with residential and other basic services.

In Michigan Bell's currently filed rate increase request, one of the errors pointed out by the interconnect companies in case U-4293 is being at least partially rectified. Most Bell operating companies, such as Michigan Bell, allocate administrative expenses on a straight-line basis, (i.e. total administrative costs divided by total booked investment). This method does not reflect all of the additional administrative expenses incurred by Telco's which benefit only Key and PBX users such as the cost for the Marketing Department, Customer Training and Competitive Advertising. In Michigan Bell's currently filed testimony, they show the annual charge percentage needed for residential service is only 5.52%. Key and PBX services require 8.19% to cover costs. (Leese Direct, Page 8) This represents an increase in cost for Key and PBX administration of 48.37%. Obviously where such charges are not properly allocated, residential and other users must make up the difference. In addition, to cover revenue requirements in this same case, Key and PBX increases of 8% to 31% are proposed.

In California, Pacific Telephone and Telegraph Co. (PT & T) recently filed new Modular Dial PBX rates—Class A (770A PBX). This filing came about after an extensive battle between the interconnects and PT & T, finally resulting in suspension of PT & T's Advice Letter 10892. The suspension was because the previously proposed rates in 10892 did not cover revenue requirements. The new filing provides for increases in charges for the 770A of between 29% and 81%. This dramatically illustrates how understated the previous costs of providing this service were as proposed in 10892.

In case 25290, witness for the New York Public Service Commission Yog Varma stated:

"The results shown in Exhibit clearly indicate that the Company's auxiliary services are a burden on the "Basic" monopoly services on a fully allocated cost basis.*

Investment made by the Company to provide auxiliary services in 1970 was *not* adequately covered by the net earnings realized from such services as a class, on a fully allocated cost basis. The Company's fully allocated cost results shown in Exhibit 105 are erroneous and its conclusions are drawn on Tr 2991, Lines 15 through 23 and based on Exhibit 105 should not be relied upon.

Other cases in at least Utah, Minnesota, Florida, Illinois, North Carolina and Texas could also be illustrated pointing out the same fallacy in the NARUC assumption that Telco Key and PBX rates are "higher than required."

However to compound this error, NARUC in their "study" admittedly made "no attempt . . . to evaluate whether price reductions . . . would constitute 'predatory' pricing such that antitrust issues would be raised, or whether such pricing responses would meet a standard of full-cost allocation." In essence, NARUC appears to be arguing that the Telco's should be allowed to reduce their prices whether or not the resulting rates are compensatory for Key and PBX services and transfer the burden to residential and other users. The "need" for these reductions is "to prevent further erosion of Telco market shares." In other words, erosion of a virtual Telco Key and PBX monopoly. However, no sound justification indicating why the monopoly should be retained is presented other than the claimed "economic harm."

Also inherent in this NARUC assumption, although not stated, is the totally unsupported contention that the Telco's are more efficient than the interconnect companies in providing Key and PBX services. While it may seem presumptuous, many interconnect companies would question this assumption.

REVENUE LOSSES HAVE TO MADE UP BY TELCOS

NARUC and the Telco's apparently assume that Telco's are automatically entitled to a fixed amount of revenues and profits, probably based on years of monopoly operation. In other words if they "lose" 100 million dollars to competition, they must be allowed to make up their losses somewhere else, such as residential customers.

Outside of the obvious questionable logic of this assumption in normal business, the assumption is also in error in fact as well. Part of these lost revenues are also lost costs. For example, the substantial cost of maintaining and administering lost systems (Page C-8) will be saved. The recoverable investment can still be reused and Telco personnel gainfully employed in the admittedly expanding Key and PBX market (Page C-5). In any event, there is no reason why the Telco's should be protected from the rigors of the marketplace, particularly when it is hardly clear that Telco Key and PBX rates are meeting revenue requirements.

INTERCONNECT MARKET PROJECTIONS

In the NARUC study (Page C-3) they assume Telco price reductions will stabilize the Telco market shares, apparently based on an October 14, 1973 Washington Post advertisement stating that, "97 percent of the business customers who switched to interconnection were motivated by cost savings." If NARUC had researched a little further, they would have found that it is not that simple. The number two motivator is service features which affects the customers cost of doing business. Time and cost saving features on new interconnect communications systems, such as the Patrician and TIE II Key systems, are nearly as important as dollar savings in the marketplace. Any interconnect company competing solely on cost savings compared to Telco charges will soon be out of business.

* These auxiliary services which are being subsidized by the "Basic" services include, among others, Private Branch Exchanges, Key Telephone Systems, Teletypewriter and Data Service, Princess, Triline and Touchtone Instruments, Residence and Business Extensions, etc." (Varma Direct, Page 54)

TOLL SETTLEMENT "SUBSIDY" LOST

NARUC claims subsidy losses from toll settlements will create a further economic harm brought about by interconnection.

The fallacy in their argument is simply that the toll revenues are still there. Obviously the interconnect customer continues to make long distance and W.A.T.S. calls. To incur a loss in toll revenue settlements, the interconnect customers or suppliers would have to be receiving the toll settlement, which obviously they are not. This is not to say that the toll settlement procedure is fair or that within the industry some individual Telco's will gain or lose on settlements. It simply means that the settlement procedure is the culprit, not interconnect.

ECONOMIC STIMULATION FROM COMPETITION IS AS AN OFFSET

In an apparent effort to insure that their study "proved" their preconceived conclusions, NARUC neatly "forgot" to include in their study the positive economic effects of competition on the Telco's and the general public outside of the business customers who acquire interconnect systems.

For example, Bell of Canada's official company position presented by Bell's Mr. Mel James stated that, "competition is better for the consumer than regulation and that it makes sense to introduce it in telecommunications whenever practical to do so." This conforms with the 1972 Canadian DOC Working Paper on interconnection which also states, "competition will result in innovation, and innovation will result in greater use of the carrier networks. This should act to reduce costs, not increase them." In addition, "the result will be many more job opportunities for all Canadians."

In a study by TR Services Limited, it found that:

"Communications awareness is stimulated by proprietary interest and significant increases in telephone traffic to the public exchange always follow the wider range of facilities available positively encouraging business by telephone rather than by correspondence. All carriers note those major increases in traffic and associated call-revenue, for example, the British Post Office estimates for an increase of not less than 14% per annum. Carriers . . . all . . . admit to vastly increased traffic flow."

In addition TR Services finds:

"It will also be asked—'can it be proved that the Carriers will derive capital investment advantages from the introduction of Interconnect? The obvious advantages to be gained have already been stated—relief from the necessity to finance and maintain Subscribers' PABX and Key systems, concentration of capital in development of the public exchange and international sectors, re-deployment of skilled personnel for the greater good, etc. Perhaps the question should read, *'can the Carriers defend their monopolies and prove that current provision of PABX and Key systems is not inhibiting development of the public networks?'*"

We would only comment that the financial advantage must be of a high order, why else would the Carriers in such diverse (and traditional) countries as Great Britain, Australia, South Africa, Eire, France, Western Germany, etc. accept Interconnect? Admittedly, in some countries, Interconnect has only been accepted after intense parliamentary and "lobby" pressure, but, in no case, is it recorded that Carriers have ever desired a return to former sole monopolies!" (Emphasis added)

Without question, many of the factors brought out in other countries apply in the United States. However, NARUC and the Telco's can only see that: They will no longer be absolute monopolies; They will have to work harder and be more innovative; They will have to be more responsive to customer wants and needs.

This must be a frightening prospect for them since they are working so hard to prevent such a condition. Instead, they should be looking for ways to allow the public to receive the benefits from competition without the unnecessary problems.

CONCLUSION

What is needed is less polarization between the F.C.C./Interconnects and NARUC/Telco's and more cooperation. Competition for Key and PBX systems is here to stay. Once that fact is accepted by all we can begin healing the "wounds" in our industry and concentrate on serving the public.

EXHIBIT 10.—*Letter From A.T. & T. to Committee Listing Actions Commenced Against A.T. & T., Involving Antitrust Issues, Subsequent to Carterfone*

AMERICAN TELEPHONE & TELEGRAPH CO.,
Washington, D.C., May 28, 1974.

MR. GERALD HELLERMAN,
Special Financial Adviser,
Senate Subcommittee on Antitrust and Monopoly,
Washington, D.C.

DEAR MR. HELLERMAN: Pursuant to your request, I am attaching hereto a status or disposition report of actions that were commenced against AT&T and Bell System Associated Companies involving antitrust issues subsequent to Carterfone.

Very truly yours,

DOUGLAS B. McFADDEN.

Enclosure :

LAWSUITS INVOLVING ANTITRUST MATTERS THAT HAVE BEEN FILED AGAINST A.T. & T. AND BELL SYSTEM COMPANIES SINCE CARTERFONE

Case	Court	Status
A.T. & T. a defendant		
American Telephone & Telegraph Co. v. Delta Communications Corp.	S.D. Miss.	Pending.
Arcata Communications Corp. v. Southern Bell Telephone & Telegraph Co. and A.T. & T.	S.D. Fla.	Voluntarily discontinued.
Bugg v. International Business Machines Corp. and A.T. & T.	D.D.C.	Do.
Brereton et al. v. Illinois Bell and A.T. & T.	N.D. Ill.	Complaint dismissed.
Chastain et al. v. A.T. & T.	D.D.C.	Pending.
C.S.I./Communications Systems, Inc. v. South Central Bell Telephone Co. and A.T. & T.	E.D. Tenn.	Complaint dismissed.
DuPont Glove Forgan, Inc. et al. v. A.T. & T. et al.	S.D.N.Y.	Pending.
Essential Communications Systems, Inc. v. A.T. & T. and New Jersey Bell Telephone Co.	D.N.J.	Do.
General Electronics Sales Corp. v. A.T. & T. and New England Telephone & Telegraph Co.	D. Mass.	Complaint dismissed.
Hartford National Bank & Trust Co. v. A.T. & T. and Southern New England Telephone Co.	D. Conn.	Pending.
Jeffrey et al. v. Southwestern Bell Telephone Co., A.T. & T. and Western Electric.	N.D. Tex.	Complaint dismissed. Appeal pending.
Kauppila et al. v. A.T. & T. et al.	N.D. Calif.	Settled.
Levy et al. v. A.T. & T. et al.	S.D. Ohio	Pending.
Macom Products Corp. v. A.T. & T. et al.	C.D. Calif.	Voluntarily discontinued.
Markowitz v. A.T. & T. et al.	E. D. Mo.	Summary judgment for defendant.
Mid-Texas Communications System Inc. v. A.T. & T. et al.	S.D. Tex.	Pending.
Radio Broadcasting Co. v. Pennsylvania Bell Telephone Co. and A.T. & T.	E.D. Pa.	Do.
San Antonio Telephone Co. et al. v. A.T. & T. et al.	W.D. Tex.	Do.
Telephone Engineering Corp. v. New Jersey Bell Telephone Co. and A.T. & T.	D.N.J.	Voluntarily discontinued.
T.V. Signal Co. of Aberdeen v. A.T. & T. and Northwestern Bell Telephone Co.	D. S.Dak.	Pending.
United Aircraft Corp. v. A.T. & T. and Southern New England Telephone Co.	D. Conn.	Do.
West End Development Co. v. Pacific Northwest Bell Telephone Co. and A.T. & T.	D. Oreg.	Settled.
A.T. & T. not a defendant		
Atlantic Telephone Corp. v. New England Telephone	D.C. Mass.	Proceedings stayed.
Miller v. New York Telephone Co.	E.D.N.Y.	Complaint dismissed.
Communication Brokers, Inc. of America v. Chesapeake & Potomac Telephone Co. of Virginia.	W.D. Va.	Do.
Business Aides, Inc. v. Chesapeake & Potomac Telephone Co. of Virginia.	E.D. Va.	Complaint dismissed. aff'd by 4th Cir.
Vuemore Cablesion, Inc. v. Southern Bell Telephone & Telegraph Co. et al.	M.D.N.C.	Voluntarily discontinued.
Telephone Service Co. of America v. South Central Telephone Co.	N.D. Ala.	Pending.
Litton Systems, Inc. v. Southwestern Bell Telephone Co.	S.D. Tex.	Do.
Southwestern Bell Telephone Co. v. Nationwide Independent Directory Service, Inc. et al.	W.D. Ark.	Antitrust counter-claim by defendant. Dismissed without prejudice. Judgment for defendant. Appeal pending.
Beltronics, Inc. v. Eberline Instrument Corp. and Western Electric Co.	D. Colo.	Judgment for defendant. Appeal pending.
Components, Inc. v. Western Electric Co.	D. Me.	Settled.
Merrimac Research & Development Inc. v. Western Electric Co. and Bell Telephone Laboratories.	D.N.J.	Do.
Rockford Research Inc. et al. v. Digital Equipment Corp., Inc., Western Electric Co., Inc. et al.	D. Mass.	Pending.
Western Electric Co., Inc. v. Dickson Electronics Corp.	D. Ariz.	Do.

EXHIBIT 11.—*Summary of Minutes of A.T. & T. Customer Products Council Meeting Re 7-10-year Lag in Modems Design*

SUMMARY OF PORTION OF MINUTES OF CUSTOMER PRODUCTS COUNCIL MEETING OF
JULY 29, 1971

ATTENDING

Council members

J. A. Baird—BTL
C. H. Elmendorf—A.T.&T.
R. W. Hendrickson—W.E.Co.
C. R. Williamson—A.T.&T.

Coordinating committee

N. A. Adams—A.T.&T.
D. H. Erickson—A.T.&T.
R. H. Klich—TTY Corp. for J. F. Auwaerter
O. H. Walston—W.E.Co.

Visitors

D. E. Brenneeman—BTL
R. G. Hochstuhl—A.T.&T.
E. R. Kretzmer—BTL
T. L. Simis—A.T.&T.
T. H. Thompson—BTL

Mr. Kretzmer reviewed the results of comparisons made between Bell data sets and those of our leading competitors. These include ICC Milgo; UBC Rixon; IBM; and Ultronics. Modex and Tuck data sets were also included because they represent unique aspects although they are not strong competitors at this time. The overall comparison showed that competitors have gained advantages in all areas, i.e., cost, size and features. Their aggressiveness in technology, service, marketing, and pricing is surpassing our own current efforts.

Mr. Kretzmer advised that BTL is looking at ways of up-dating our designs and will be back in the fall with proposals for Council consideration. Mr. Elmendorf summarized by stating that we have allowed our competitors to get 7-10 years ahead of us in design.

Mr. Adams reviewed the material prices and monthly costs for the 200 type data sets. The 201B costs \$1275 with a monthly rate of \$75, while the comparable Milgo set is \$2450 with \$87/month lease plan.

Mr. Elmendorf stressed that the committee must formulate specific questions regarding our entire competitive position and then strive to answer these questions in the final report. For example: How can our competitors lease more expensive data sets at lower rates than ours? Why are we behind in new art applications? What changes are required in our tariffing methods?, etc. A report covering these matters was requested for the November meeting.

EXHIBIT 12.—*A.T. & T. Correspondence Re Rates for Com-Key 718 and 1434*

OCTOBER 18, 1973.

MR. WILLIAM R. STUMP,
American Telephone & Telegraph Co.,
New York, N.Y.

DEAR MR. STUMP: The Trial Staff thanks you for your response No. 2756 furnishing a copy of "Nitsuko/TIE 1030 System—Feature and Economic Evaluations as Compared to Similar System Offerings (TS-172-2)." Two Bell System Key Offerings, Nos. "1" and "2", are used for price comparisons with the Nitsuko 1030 on pages seven through sixteen of that document. Each Bell System offering is broken down to show the equipment price of each "piece of equipment" used to provide each of the complete systems. The Trial Staff requests that you generate two lists, one for each Bell System offering compared, showing Western's manufacturing standard cost of each system's "pieces of equipment" identified in the comparison on pages seven through sixteen.

The Trial Staff also requests that you provide three lists, each list showing the price, standard cost, and installation ("work time") effort for each "piece of equipment" comprising the following three Western Electric key system offerings.

1. ComKey 718—6 lines and 10 stations, paging in three zones, and all available features for both (a) rotary dial, and (b) touch-tone systems.

2. ComKey 718—7 lines and 15 stations, paging in three zones, and all available features for both (a) rotary dial, and (b) touch-tone systems.

3. ComKey 1434—10 lines and 34 stations, paging in four zones, and all available features for both (a) rotary dial, and (b) touch-tone systems.

The Trial Staff expects that the information requested for the 718 and 1434 ComKey System offerings specified above will be presented in the identical format and with comparable specificity as that referred to in pages seven through sixteen in TS-172-2.

Thank you for your assistance. Kindly direct your assistance to Mr. Manley Irwin of our staff.

Sincerely yours,

PETER M. ANDERSEN,
Deputy Managing Counsel,
AT&T Task Force.

AMERICAN TELEPHONE & TELEGRAPH Co.,
New York, N.Y., November 6, 1973.

Mr. MANLEY IRWIN,
Federal Communications Commission,
AT&T Task Force,
Washington, D.C.

DEAR MR. IRWIN: This is in complete response to the Trial Staff request of August 7, 1973 (Reference 894.26, 883B.661) regarding information referred to in GL 73-04-076.

This General Letter states that a distribution to Marketing and Rate heads of illustrative rates for the introduction of Com Key 718 and Com Key 1438 will be made in the near future. In that regard, a preliminary transmittal of such illustrative rates has been made to assist the local companies.

Since the transmittal relates to the development of proposed intrastate rates which fall solely in the jurisdiction of the state commissions, we feel that this information is not relevant to the issues in Docket 19129.

Sincerely,

W. E. STUMP.

EXHIBIT 13.—*Summary of Minutes of A.T. & T. Presidents' Conference: Re Competition*

PRESIDENTS CONFERENCE—NOVEMBER 9-12, 1970

Competition

SUMMARY

Number of installed interconnected competitive systems: 10 key: 11 PBX: total of 21.

Number of active competitors, 7.

Primary locations: Albuquerque, Phoenix, Denver, and Salt Lake City.

COMMENTS

Pricing

Our pricing structure is not based on a competitive climate. Charges for access lines, terminal equipment and usage have been designed for maximum development (number of customers) and cost averaging. Any changes will require lengthy regulatory activity.

Our customers do not have payment options for one-time, recurring, service or maintenance charges. We have a "Customer Optional Payment Plan" under review.

The PBX and Key packaging concepts leave voids which our competitors can exploit.

Billing methods and bills are difficult for the customer to understand.

Depreciation

We are a regulated industry and must negotiate depreciation rates with regulatory bodies. For this reason, we have not been able to rapidly adjust depreciation to reflect obsolescence. This discourages the replacement of termi-

nal equipment for modernization. This gives competition the advantage with new cabinetized, modern equipment.

Sales Effort

Capital limitations have often restricted our ability to pursue a program of upgrading customer services to newer equipment.

Market programs are designed to service the selected accounts, handle demand and, when resources permit, initiate sales effort with those customers where the highest potential exists for increasing revenue. This leaves a large part of the market where contracts are infrequent and the communications consultant is not familiar with the specific customer. Our programs are not designed to provide the manpower to "service" and meet competition in the entire business market.

The Marketing activity measurements are not designed to reflect effort or success in "servicing" the business customers. This is currently under review.

Product Line

The 701-740 vehicles in use are not competitive (features, floor space, appearance) with new cabinetized equipment. Customers are unwilling to use valuable space for bulky equipment. This is especially true in the Hotel/Motel industry.

The System has historically developed PBX equipment for long service life and multiple use purposes. This increases the cost significantly.

The development interval between inception and availability for service is excessive.

The interval between the customer order and service is often unacceptable.

We have voids in our equipment lines. The manual PBX vehicles such as 555, 507 are "manufacture discontinued" and we do not have an inexpensive replacement. We have approximately 3,000 of these in Mountain Bell which are vulnerable to competition.

EXHIBIT 14.—*Michigan Bell Publication on Competition (Excerpts)*

[Focus on Competition, Issue No. 72-3]

POTENTIAL DEVELOPMENTS FROM THE LABS

Bell Telephone Labs has asked a number of the Operating Companies to suggest and evaluate new applications and/or features offered or planned by our competitors and not now available through the Bell System. We are also providing feature-by-feature evaluation by market segment. All this, in order to provide a marketplace perspective needed in planning future customer switching systems and the relative marketability of features. We can expect some relief in these areas in the way of more competitively designed apparatus, now that BTL has begun asking questions.

* * * * *

DATA TRANSMISSION NEEDS

Be alert to customers' data transmission needs. Interfaces for Key and PBX do not permit data signals to be transmitted. If a customer is considering private equipment, the requirement for data transmission can be a point in our favor competitively.

* * * * *

EXHIBIT 15.—*National Academy of Engineering Article Entitled "Telecommunications Research in Foreign Countries"*

[From Business Communications Review]

COMMITTEE ON TELECOMMUNICATIONS, NATIONAL ACADEMY OF ENGINEERING

Telecommunications Research in Foreign Countries

At the request of the National Science Foundation, the Panel on Telecommunications Research of the Committee on Telecommunications of the National Academy of Engineering has made a preliminary survey of the status

and trends of telecommunications research in the United States and selected foreign countries. In the portion of the survey on foreign countries, attention was given specifically to telecommunications research in technologically advanced countries abroad, including European data networks. A review was made essentially from published literature, bulletins of international organizations, and information from overseas associates covering government sponsorship of telecommunications research in the major industrial nations of Europe, Japan and Canada.

It is important to note that the structure of telecommunications in most of these countries begin primarily with a government department responsible for mail, which subsequently branched out, initially into telegraphy and subsequently into telephony. As a result, most of these organizations have a long history of government support. With a few exceptions (such as Sweden and Italy), and unlike the major telephone utilities in the U.S., there has been no history of ownership of telecommunications manufacturers by these organizations. Increasingly in recent years, because of the need for stability of financing independent from some of the political considerations which color parliamentary votes for appropriations, there has been a trend for conversions of these government departments to public business undertakings as has recently happened with the U.S. Postal Service.

GOVERNMENT-FUNDED RESEARCH

For the purpose of this article, government sponsored telecommunications research will be construed to include also that sponsored by public business undertakings and telecommunications utilities in which there is a substantial government interest.

In Europe, the major telecommunications organizations have established an organization called the European Conference of Post and Telecommunications Administrations (CEPT). The activities of this group are periodically published in the "Bulletin CEPT." In addition, six Common Market countries in collaboration with nine other European countries have established a group of telecommunications experts within an organization known as the European Cooperation in the Field of Scientific and Technical Research (COST).

The principal other inter-European activities concern those involving the realization of European satellite systems which include the European Space Research Organization (ESRO), the European Launcher Development Organization (ELDO), a private venture organized by European industry entitled EUROSAT, and supporting activities involving broadcasting from satellites under the European Broadcasting Union (EBU).

France

Telecommunications research in France is controlled primarily through three organizations. The most important of these is the National Center for Telecommunications Studies (CNET) which has a current planned expenditure over the 1971-1975 period of \$270,000,000 for external studies and about \$135,000,000 for internal research and development.¹ Additional development affecting telecommunications is carried out by the military, which in the current French five year plan is estimated at a total of \$130,000,000 and at the National Center for Space Studies whose program is \$114,000,000 over the same period, with an estimated telecommunications portion of 10 percent. Some small additional work is programmed in the French Radio and Television Organization (ORTF).

United Kingdom

In the United Kingdom telecommunications research is primarily controlled by the British Post Office (BPO). For the 1971-72 fiscal year, the BPO total R&D funding was \$43,000,000, up 42 percent from \$30,000,000 in 1970-71, and it is estimated² that British manufacturers participated in matching development on specific BPO projects with another \$10,000,000. The significant ex-

Editor's Note: This article is an edited version of parts of the report entitled "Telecommunications Research in the United States and Selected Foreign Countries: A Preliminary Survey," prepared by the Committee on Telecommunications of the National Academy of Engineering. The report is available from the National Technical Information Service of the U.S. Department of Commerce. BCR assumes responsibility for the editing.

¹ The currency conversion rates on which all figures in this article are based were those in effect in late 1972.

penditures of the BPO were for switching and signaling \$12,800,000 (up from \$7,500,000), data communications (mostly data switching) \$2,800,000 (up from \$2,10,000), transmission \$12,900,000 (up from \$9,100,000), customer's equipment \$2,500,000 (up from \$2,00,000), power and civil engineering \$4,400,000 (up from \$3,800,000) and the balance on special and advisory activities.

West Germany

In West Germany, "transportation and telecommunications" funding by the government in 1971 was at the \$100,000,000 level (up 50 percent over 1970), with a like sum for data reduction (principally computers). The 1975 forecast shows each of these near the \$300,000,000 level. In addition, funding for "special technology in industrial innovation" provided another \$22,000,000 in 1972 (up 18 percent over 1970). The principal government activities are directed by the German Research and Development Institute for Air & Space Activities (DFVLR) and by the German PTT Research Laboratories (FTZ).

Scandinavia

Although generally small, some good advanced activities are carried out in the Scandinavian countries. The Swedish Telecommunications Administration has its own Laboratory and a joint research and development company (Ellemtel) in telecommunications equally owned with the Swedish manufacturer, L. M. Ericsson. The principal activities in these two organizations concern semi-electronic public telephone exchanges, PABX's, PCM transmission, and the future Swedish data network.

In Denmark, the Telecommunications Research Laboratory (supporting the Danish Telephone Administration), is working on active filters, DC data transmission for local distribution and processor controlled telephone exchanges. The head of this laboratory, whose budget is approximately \$400,000 per year, is also professor and head of the Institute of Communications Theory at the Denmark Technical University. Also in Denmark with a budget of \$850,000 per year, is the Danish Research Center for Applied Electronics which is involved in Danish participation in European satellite evaluation for Danish electronic manufacturers and studying convolution coding.

The Norwegian Telecommunications Administration Research Institute is primarily involved in long range planning for the national telephone network, evaluation of new systems and components, and specification of new systems and components as a basis for study and development contracts to industry. Its current budget is about \$1,000,000 per year.

Italy

In Italy, government funded research has been at the \$25,000,000 level. A large program in millimeter wave propagation has been sponsored by the Ministry of Posts and Telecommunications (PTT) at a level of \$13,000,000 over a three year period. A very limited program in satellite propagation measurements and a second one for a 10 to 20 meter long test installation of microwave guide were also government funded at a level of \$800,000 each.

Switzerland

In Switzerland a PTT-sponsored program is being conducted with the three national manufacturers on integrated PCM voice and data switching.

Japan

Japan has been uniquely successful in buying and copying technology, particularly in telecommunications. Japan has gone as far as possible in this direction and has already changed the thrust of the main government research efforts toward more emphasis on research in Japan. The present plan of the Science and Technology Agency calls for continued expansion of total national spending on R&D, with emphasis in three areas. First, Japan must seek to develop its own unique technology base for solution of its problems. Second, its technology and R&D bases must be socially oriented. Third, new technology must develop assessment techniques which will anticipate adverse social or environmental changes.

Canada

Telecommunications research in Canada is mainly carried out through Bell Northern Research, a subsidiary of the Bell Telephone Company of Canada and the Northern Electric Company. Some additional work is carried out in

switching at Automatic Electric of Canada, radio links and satellite systems at RCA Victor, and postal mechanization at JTT Canada. This work is essentially funded by the telephone utilities, or by the manufacturers out of equipment prices. The Canadian Government does, however, have two programs for sharing research and development costs in industry which contribute significantly to reducing the cost of R&D in Canada. The Program for Advancement of Industrial Technology (PAIT) normally allows a 50 percent reimbursement on research done in Canada leading to advanced products. In addition, under the terms of the Industrial Research & Development Incentives Act (IRDIA), tax free grants, or credits against Federal income tax liabilities, are provided equal to 25 percent of all capital expenditures for scientific research and developments in Canada during a fiscal year, over the average of such expenditures in the preceding five years.

RESEARCH ACTIVITIES

The following are major areas of telecommunications research being sponsored in public and private voice switching, message telex and data switching, satellite systems, mobile and portable radio and subscriber apparatus.

Public and Private Voice Switching

The principal current research programs in most of the European countries involve semi-electronic switching, that is, exchanges with electromechanical crosspoints and electronic control of either the wired or stored program type. This generation of exchanges corresponds to the AT&T type ESS No. 1 and No. 2. The most active government supported programs in this area are the EWS-1 program in Germany, the TXE-2 and 4 programs in England, and the program in Sweden of the R&D company Ellemtel. In each of these programs a strong government interest and direction is combined with the activities of national manufacturers. Although the French Government sponsored some work in this area, as described below, its principal thrust is in time division switching.

The current study program sponsored by NTT in Japan covers the experimental service of one previously installed electronic switching system, a simulation test of international automatic dialing, a system test of a newer generation of space division semi-electronic switching in four large local exchanges and two toll exchanges, and field testing of medium and small exchange design. Neither the Japanese nor European work in this area appears appreciably in advance of the AT&T ESS Nos. 1 and 2 designs which have been available for several years, with the exception of the real time communication processor. However, none of the overseas processor development appears ahead of the AT&T No. 1A processor which will replace the older No. 1 used in ESS No. 1. With the exception of small exchanges in the United Kingdom and all sizes of exchanges in Belgium, no general commitment appears to have been taken thus far to install semi-electronic exchanges in quality in Europe or Japan.

In the field of PCM time division switching, there appears to be a general viewpoint in Europe that the first fully electronic switching to be applied will be of the time division type. The most advanced work in this field has been done in France with an integrated rural network in one region of the country. Various pronouncements by officials of the French Administration clearly show that early introduction of PCM time division switching is contemplated with some 10 percent of new switching lines ordered by 1975 being in this technique. The Italian Administration is also supporting development work in PCM time division switching, and study programs are being organized by government bodies in several other European countries.

One of the interesting studies being undertaken in Europe in several countries is the extent of integration in new time division exchanges of switching and transmission. In Belgium and the Netherlands a trend seems to indicate that modern forms of data switching will be integrated with PCM switching as well as PCM transmission. The development in Switzerland of IFS-1 is anticipated to integrate in one network telephone, telegraph, message and data switching and transmission. Studies funded in the United Kingdom by the BPO for a data network point toward operating in a fully synchronous mode with digital terminals. Some lesser work has been published on Japanese efforts in

this area, but for the time being Japan does not appear to be heading as heavily towards integrated switching and transmission of telephony and other service programs as its European counterparts.

In the current Japanese NTT program there is a special project on a computerized centrally controlled TV circuit switching system, which is in the field test stage.

Message Telex and Data Switching

A major item in NTT's research program is a general study of the data switching network, including data switching equipment. The purpose of this study is to design and construct a digital network capable of supplying economical high quality service in proportion to the demand for data communications and other advanced service. The specific current study tasks include a survey and analysis of traffic in order to qualify the method of optimum network configuration; technical specification of the digital network for data communications, telex, facsimile and other services; and standard interfaces for data switching equipment. An experimental model for time division switching, packet switching and a space division switch will be designed and manufactured for trial.

In Europe, in addition to the integrated networks described above, the United Kingdom Post Office has been funding study work by two national manufacturers in synchronous data switching. The German Post Office has funded two German manufacturers on a new data switching system (EDS-1) which is primarily aimed at telex services with a capability to incorporate data. In the study of these new systems the use of packet switching for data networks has been emphasized.

Of particular interest is current European planning for implementation of an improved telex service with a speed transmission of about 200 bauds. This service is currently available on an experimental basis in France, is proposed for early introduction in Italy, Belgium and Germany, and is being considered for introduction in the United Kingdom, the Netherlands and perhaps other European countries in the latter half of this decade. In implementing this new service, the approaches have been mixed between installation of semi-electronic exchanges as an outgrowth of comparable developments for telephone switching, and others moving more adventurously to packet switching techniques in preparation for the evolution of integrated telex and data networks.

Satellite Systems

Substantial inter-European cooperation exists in projects sponsored by official multinational organizations such as ESRO, ELDO, EUROSTAT and EBU. The specific thrust of these developments has been towards a European satellite system. To this end the British, German, and French governments have sponsored considerable space research. The French Five Year Plan in the National Center for Space Study expects to place outside contracts totaling \$114,000,000, of which 10 percent will be for telecommunications. German funding in the space research field is building up to about \$300,000,000 per year by 1975. The Italian Government plans to increase its space research from \$25,000,000 in 1971 to \$100,000,000 in 1977, and in support mentions the estimates of space research spending in 1971 by France of \$133,000,000 (up 23 percent over 1970), West Germany of \$130,000,000, and the U.K. of \$50,000,000.

The NTT (Japanese) program for research in satellite communications includes the development of a medium capacity satellite for isolated islands and emergency communications, and a large capacity satellite to meet the increasing general demand for telecommunications anticipated in the mid 1970's. The items to be studied include frequencies, type of modems, rainfall attenuation, satellite mounted repeaters, antennae for ground stations and satellites, and reliability against launching shock.

Data Transmission

In data transmission, NTT is funding an experimental test service for 48 kilobit data transmission using a 48 KHz data channel. Additional study is being made on 240 kilobit data and facsimile transmission over 240 KHz super groups. Experimental test services are going forward with 4.8 and 9.6 kilobit modems on voice channels and 12 KHz pregroup channels.

Mobile and Portable Radio

In addition to the classic two-way services used in the U.S., the European administrations are supporting the development of radio paging to be interconnected with public networks. Switzerland, in particular, has been working actively on the use of its national network by travelers from other countries with their own mobile equipment. A cooperative effort is being supported by several European countries leading to the development of a wholly automatic mobile service accessible through the public telephone system towards the end of this decade. Because of the many nations involved, this system is at present technologically far behind the system developed by AT&T in the United States.

Switzerland has supported development of radio paging services and experimental services have been established in several countries. These services are also affected by national fragmentation and lag far behind comparable paging systems in use in the United States.

Subscriber Apparatus

The NTT program for research and study includes two projects on subscriber apparatus. The first concerns experimental service using several types of public telephones meeting the requirements of a new local call metering carrier system and the second covers experimental field testing of a newly developed light weight telephone. In the keyboard printer area, field tests will be made on a new 100 bit per second keyboard printer and a 200 bit per second non-impact printer. A 1200 bit per second keyboard cassette prototype set will also be tested.

In Europe, a broad based concern with multiple conferencing was found. The BPO, in particular, is funding studies by the Communications Studies Group covering electronic person-to-person communications; audio and visual delivery; converencing behavior studies on negotiating face to face and via audiovisual techniques, and patterns of conflict under similar circumstances. Research work sponsored by the Australian Post Office on visual teleconferencing is also underway. The principal impetus for this work seems to be a feeling that substitution of telecommunications for travel can be more readily effected by less expensive audio and visual conferencing arrangements than by person-to-person video-phone.

With few exceptions, European administrations have not been directly involved with support of data terminal development. On the other hand, they retain close supervision over the company-funded development programs at the five major European teleprinter manufacturers. The practice to date has been for the administration to control the modems attached to its network, in most cases making them available for mandatory use under public tariffs. Such support as has come to manufacturers as part of computer industry support, may influence data terminal design for the telecommunications administrations in the future.

The NTT is actively developing picture telephones and has in its program a study of the application of picture telephone switching on semi-electronic telephone switching equipment, paired cable, and picture telephon converters for use over analog and digital land line transmission systems. The current Seven Year Plan (1971-1977) calls for installation by 1977 of some 30,000 video-telephone sets.

In Europe, picture telephone research appears to have been limited because of concentration on providing basic telephone service. The German Post Office has funded studies of subscriber satisfaction on various bandwidths of picture telephone. At a recent CCITT meeting, representatives from Holland and Sweden raised the question of interconnecting closed circuit television with proposed European picture telephone standards which seems to indicate some study work in those two countries on this subject.

In facsimile service a number of European countries allow operation of private equipment on public telephone networks. In West Germany, however, a public service is operated manually specifically for facsimile with some public picture stations and a few hundred private subscribers. Several administrations have investigated the possible establishment of a public facsimile service, particularly France and Belgium. In essence, the user requirements appear to be toward much faster facsimile services than are now available.

EXHIBIT 16.—Article Concerning European Communications Quality to Surpass United States By Early 1980's.

[From Business Week, Apr. 13, 1974]

THE COMMON MARKET REWIRES ITS PHONES

THE TELEPHONE BOOM IS OPENING CLOSED MARKETS TO U.S. SUPPLIERS

Throughout most of Europe, unfamiliar new telephone sets made by International Business Machines Corp. and other manufacturers are startling American visitors. And well they might. For years, the government-operated British and European telephone systems, underfinanced and locked into rigid "buy national" equipment purchasing traditions, have steadily lagged behind U.S. service standards. Now, pressed by both public demand and massive changes in technology, a telephone boom of unprecedented proportions is opening up in the Common Market countries.

This year in Britain and the Continent, government postal telephone and telegraph operations (PTTs) are spending about \$3-billion for new central-office switching equipment alone. In addition, according to market projections by International Telephone & Telegraph Corp. and other suppliers, privately purchased business telephone systems will account for \$1 billion worth of new orders this year. Barring worldwide recessions, most manufacturers expect a 25% annual growth rate in the private market segment for the balance of the decade.

The big and relatively underdeveloped telephone industry in the European Community has a lot of catching up to do. Roughly the same size in population as the U. S., the EC countries lag far behind in telephone service. Compared with the U. S.'s 60 telephones for 100 population, France has only 18.5, Italy 19, and Germany 25. Among the major EC countries, Britain leads with 29 telephones per 100 people. Compounding the large in market penetration, much of the EC telephone plant is obsolete: Many telephone exchanges are based on rotary switching technology dating back to the turn of the century.

THE CLUB

So PTTs on the Continent and in Britain are undertaking a massive rewiring job as well as expanding the telephone network. But the project may be beyond the capacity of the existing equipment industry, where a tight club of favored national suppliers has manufactured virtually all European telephone equipment for decades. U. S.-based multinational companies, notably IBM and General Telephone & Electronics Corp., are nudging in, while new international alliances are springing up among the existing cartels to protect their markets.

Britain's Plessey, Ltd., which has about 40% of its home market for switching equipment, for example, teamed up last month with France's second-largest switchgear manufacturer, CIT-Alcatel, to develop and market a new-generation electronic switching system. But such arrangements come hard in the highly politicized market of supplying government-owned and operated PTTs.

The idea of importing telephone equipment is anathema to national trade unions and the favored companies alike. Both groups encourage restrictive domestic technical standards that form a secondary barrier that may prove tougher to change than outright import bans or high tariffs. But multinational companies such as ITT, L. M. Ericsson of Sweden, and IBM are exploiting both old and new ways of living with the problem of national restrictions.

ITT and Ericsson, veterans in the industry, have long had local manufacturing operations that assume the national identity of the host country. ITT has been the largest "European" supplier of telephone equipment since it acquired American Telephone & Telegraph Co.'s foreign manufacturing operations back in the 1930s. The big multinational corporation attempts to keep a low profile in telecommunications, but its plants produce 15% of the switching equipment in Italy, 32% in Germany, 25% in Britain, and 42% in France, where it enjoys the largest share of any supplier.

INSIDE CONTROL

In all major countries except Italy, where there are four suppliers, three companies split most government switchgear orders. Normally, suppliers in a

country cooperate on research and development and produce equipment to the same engineering standards under control of the PTT. Breaking into such tight arrangements is risky and difficult for outsiders, and when push comes to shove, the insiders still have tight control.

Despite all the restrictions, two trends—a massive technical change and a burgeoning private equipment market—are weakening the nationalist pattern. Led by IBM and L. M. Ericsson, a massive marketing drive is under way to exploit the business telephone market for privately owned electronic switchboards (PABXS) capable of handling both voice and data. It is roughly equivalent to the new "interconnect" market in the U.S. except that it is an older, established business. Privately owned telephone equipment was banned in the U. S. until the last two years, but most European countries have permitted it for decades. Such equipment still needs government approval before it can be interconnected to the telephone network, but such approval is easier to get than breaking into the inner circle of preferred suppliers to the PTTs.

GROUND FLOOR

IBM led the way in the private PABX field with a gutsy and expensive product development and marketing strategy that has won its equipment the approval of PTTs in six countries on the Continent (Switzerland is the major holdout), and in Britain and Brazil. IBM broke into the market with a medium-sized PABX made in France and known as the 2750. The company intended it primarily as a market-test product but has sold about 100 installations—twice the number it had planned.

Two years ago, the computer maker announced a larger version, the 3750, which handles up to 256 trunk lines and 2,264 extensions. In addition, the electronic switchboard also provides automatic internal billing, automatic dialing, and even building surveillance and alarm services. Fancy new telephones read data cards, and provide direct connections for handling text or data typed on electric typewriters, while a variety of new terminal accessories from card readers to keyboards blur the distinction between data processing and communications services.

IBM reportedly has taken orders for more than 100 of the new switches, representing a total value approaching \$100-million. Though IBM is rumored to be ready to announce a product line similar to the 3750 in the U. S., it has not yet moved to do so.

POISED TO MOVE IN

There is no question that IBM's massive market entry has frightened European competitors, particularly ITT and Ericsson, into speeding their product development programs. Both Ericsson and ITT are now offering combined data and voice systems with data-handling computers and electronic voice switches.

So far, IBM has not made any visible move toward entering the lists for a share of PTT switching procurement, but it is almost unquestionably in a position to do so if the market opens up. But IBM's mere presence may be hardening national resistance to a move toward Common Market technical and trade agreements for telecommunications equipment.

Favored suppliers are still succeeding in keeping newcomers at bay. In Britain earlier this year, Plessey, General Electric, Ltd., and ITT's Standard Telephones & Cables, Ltd., blocked a bid by Pye TMC of Britain, a subsidiary of Philips of Holland, by refusing to share technical knowhow relating to Post Office switchgear. Across the Channel, French switchgear makers persuaded the PTT to turn away Siemens of Germany's offer to sell switches to help meet the shortage.

Over the border, the German Bundespost, while legally committed to open market purchasing, neatly ensnares potential competitors to its domestic suppliers in a maze of technical and performance standards that are almost as effective as an outright embargo. In Switzerland, even IBM has not been able to get permission to sell its PABX. Sums up Henri Douquier, head of the telephone trade association in France, "Opening borders is clearly the wave of the future, but it has to work two ways—you sell in my market only if I can sell in yours."

The rules may have to change simply because of the technological revolution that is overwhelming the telephone industry. Europe's creaky old electromechanical switches must be replaced, and the PTTs must extend telephone service to many more customers. Top advisers in government and in international technical committees of the EC are urging the PTTs to move faster and

leap from standard circuit-switched networkers to all-electronic, all-digital telephone systems that could cut equipment costs in half. Given the political go signal, some believe, such a move could put Europe ahead of the U. S. in quality and variety of communications services by the early 1980s.

EXHIBIT 17. *Material Prepared for the Use of Southwestern Bell at Bell System Presidents Conference of October 30–November 8, 1971*

PBX RATE PLANS

Our entire approach to the PBX market, from product inception to service offering, must become more market sensitive.

The Western Electric Plant at Denver, Colorado, incorporates both the design efforts of Bell Labs and the manufacturing efforts of Western Electric under one roof, with a primary objective of decreasing design and manufacturing time. Two of the PBX systems manufactured at Denver, the 770A PBX and the 805A PBX, will play an important part in our future rate plans.

The 770A PBX is a comparatively inexpensive vehicle to manufacture and requires minimal floor space at the customer location. With a capacity of 400 main station lines, it could service 98 percent of the PBX market.

The 805A PBX is designed to meet the needs of small dial PBX customers. With a capacity of 57 main station lines, it is inexpensive to manufacture and requires minimal floor space.

With the introduction of these new serving vehicles, we must re-evaluate the rate approach that was used in developing our Series 100, Series 200, and Series 300 Service offerings.

The Series 200 and Series 300 offerings are currently in effect in all our Company's service areas except Illinois. Series 100 Service is effective only in the State of Missouri. It has not been filed in our other service areas because introduction of Series 100 would have resulted in rate cases. Series 100 introduction in these areas should now be deferred until the new rate plans are introduced.

Our current Series Package rates are based on average objective main station line fill for the various PBX serving vehicles. Rates were developed based on an average line fill of 85 percent of PBX vehicle capacity. Actual line fills have averaged approximately 50 percent, which has resulted in higher cost per line and decreased profits per system.

Simply increasing rates for our Series Package Service offerings would increase the profitability of the offerings, but we must accomplish much more through sound rate administration. We need to establish proper rate relationships between our existing Feature-priced systems and our Package offerings, and at the same time established a rate structure for the new serving vehicles. Our rate structures must also be competitive.

AT&T's proposed rate structure will include "unbundling" many of the services currently included as standard features of our Service Package offerings. A basic and inexpensive service package will be introduced. The customer will then be able to choose separate optional service features that are currently available only to Series 200, Series 300, and Centrex Service customers.

The new offerings will include Series 100A, Series 100B, and Series 100C. The 770A and the 805A PBX systems will be two major serving vehicles for the new offerings because of the cost and floor space advantages they offer.

770 PBX—HOTEL SERVICE PRICING PROBLEMS

The 701B PBX system is currently the major serving vehicle for our hotel-motel installations. The 701B PBX has inherent disadvantages of high cost and the requirement of a large equipment room.

The 770A PBX system will overcome the cost and floor space disadvantages of the 701B PBX. The 770A PBX has a capacity of 400 main station lines, which could serve over 95 percent of the hotel-motel market. The vehicle requires minimal floor space at the customer's location and its installed cost is substantially less than that of the 701B PBX.

Although the 770A PBX has been available from Western Electric on an allocation basis since May of 1971, illustrative cost and rate material was not received until October of 1971. In July of 1971 we began developing Order-of-Magnitude rates based on estimated cost data because of customer demand for

vehicle and because of increased competition in the hotel-motel market. We began receiving customer comments that our rates were higher than rates for competitive systems. Also, AT&T said that our rates were higher than those which they would recommend.

A thorough analysis and comparison was made of our Order-of-Magnitude rates with competitor's system rates, 770A rates being applied by other Associated Companies, and 770A rates that AT&T was to recommend. After making adjustments in carrying charges and installed costs based on more definite information from AT&T, our rates were still greater than those which were to be recommended by AT&T. The analysis and comparisons were referred to AT&T in October of 1971 for assistance in resolving the rate differences (See Attachment I).

On October 13, 1971, we received AT&T recommended rates and found our Order-of-Magnitude rates to be very much in line with the AT&T rates (See Attachment II). While our monthly rates ranged from \$3.00 to \$45.75 per month more than the AT&T rates, the AT&T rates included substantial installation charges that were not applicable to our rates.

A Hotel-Motel Service Package Offering is currently being developed utilizing the 770A PBX as the serving vehicle. The offering must maintain a proper relationship with our Feature-priced Tariff offering of the 701B PBX. We must consider that a package offering with a low monthly rate could result in numerous changeouts of existing 701B installations to the new package offering. Some deterrent, possibly in the form of installation charges for the package system, must be introduced to discourage changeouts. Also, we must develop the package rate as low as possible in order to meet competition.

Attachments:

OCTOBER 15, 1971.

Mr. S. E. BONSAK,
Vice President-Market and Service Plans,
American Telephone & Telegraph Co.,
New York, N.Y.

DEAR SAM: During the past five months, several Hotel-Motel Service customers throughout our Company have considered proposals from outside suppliers of PABX Systems for the installation of non-Bell Systems.

Of the hotel-motel customers who have given serious consideration to the outside supplier's systems, most found that our competitor's systems required less floor space and had a lower monthly lease rate than our Hotel-Motel Service Offering with conventional serving vehicles.

Based on preliminary information we had received from AT&T concerning the 770A PBX System, we saw in it the opportunity to overcome the floor space and cost disadvantages inherent in the 701B PBX System. Since neither firm cost data nor suggested rates were available for the 770A PBX System, we developed rates on a system-by-system approach based on estimated costs from Western Electric.

We have since evaluated our initial Order-of-Magnitude 770A PBX rates by comparisons with competitor's system rates, with rates being applied by other Associated Companies, and with rates suggested by AT&T. These comparisons, together with the adjustments we have made, are outlined in the attached material.

We must meet competition. Whether additional adjustments in our 770A PBX System rates will be necessary in order for us to meet competition remains to be seen. Our 770A PBX rates, however, continue to be in excess of those suggested by AT&T and our present Tariff-filed 701B PBX rates.

We ask your ideas and suggestions, in the light of the attached material, concerning the procedures we are using to develop rates for 770A PBX installations for our hotel-motel customers and how we can reconcile the major differences reflected.

Very truly yours,

Lou.

Attachment:

MEMORANDUM

While the proposals presented to hotel-motel customers differed from system to system, all had two basic characteristics:

1. A monthly lease arrangement for a minimum period of from five to ten years with maintenance included in the monthly lease on a standard or optional basis.

2. An outright sale arrangement. Most of the proposals had an optional maintenance contract.

Of the hotel-motel service customers who gave serious consideration to an outside supplier's system, most were interested in the lease arrangement. Generally, they found two characteristics attractive in our competitor's systems when compared with our proposal:

1. The floorspace required by the competitor's system was substantially less than that required by our 701B PBX system. The 701B PBX system is the primary serving vehicle for our dial Hotel-Motel Service offering.

2. The monthly lease amount for the competitive PABX systems was usually less than that for our Hotel-Motel Service.

Based on the information we had received from AT&T concerning the 770A PBX system, we saw in it an opportunity to overcome the floorspace and cost disadvantages inherent in our Hotel-Motel Service offering with the 701B PBX as a serving vehicle. The 770A PBX was to be a low-cost vehicle with modular design.

In an effort to meet both competition and our customers' request for a low-cost space-saving vehicle, we contacted AT&T for cost data and suggested monthly rates for the 770A PBX. We were advised that firm cost data had not been received from Western Electric. We were also advised that, since cost data was not available, recommended rates had not been developed. We were, however, given estimated costs for the 770A PBX.

Based on the estimated cost data, we began rate development on a system-by-system basis for installations that were subject to loss to competition. We have since been receiving questions and comments from AT&T, Western Electric, and our customers concerning the rates we had developed.

ATTACHMENT I.—COMPARISON OF MONTHLY RATES

	South- western ²	South Central ³	Southern ³	North- western ⁴ (Nebraska)	North- western ⁴ (Minnesota)
Hotel trunks ¹	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Attendant console.....	\$200.00	(⁵)	(⁵)	\$50.00	(⁵)
Powerplant.....	90.00	(⁵)	(⁵)	(⁵)	(⁵)
Toll diverting.....	120.00	(⁵)	\$110.00	(⁵)	(⁵)
Common equipment.....	370.00	\$520.00	675.00	60.00	\$100.00
10-guest stations.....	714.00	480.50	465.00	893.00	872.50
30-Adm. stations.....		52.50	52.50		75.00
6-guest single digit dialing codes.....	57.00	(⁵)	28.50	24.00	24.00
Message waiting service:					
2-cabinets.....	23.00				
10-lights.....	108.50	155.00	155.00	124.00	124.00
Passage register service cabinet.....	11.00				
10-registers.....	155.00	191.50	191.50	186.00	341.00
20-trunks equipped.....	125.00	20.00	20.00		
Central office trunk terminal.....		78.00			
Touch-tone.....	680.00	365.00	365.00	365.00	365.00
Total including touch-tone.....	\$2,653.50	\$1,862.50	\$2,062.50	\$1,702.00	\$1,901.50
Total with touch-tone.....	1,973.50	1,497.50	1,697.50	1,337.00	1,536.50

¹ Trunk rates are excluded due to differences in rate structures.

² Rates used are those approved for the Camelot Inn installation in Little Rock, Ark.

³ Rates based on estimated costs for Nippon HA4-09 PBX System.

⁴ Rates are based on current Hotel/Motel Service Tariff rather than being based on 770A PBX System costs.

⁵ Omitted.

⁶ (Com. Eq.).

Attachment II

St. Louis, October —, 1971.

MR. BAILEY: Your letter of October 15, 1971, to Mr. Bonsack included a comparison of our Order-of-Magnitude rates with those that were being suggested by AT&T. The AT&T suggested rates included in the letter had not, at the time, received executive approval. They were relayed to us verbally in order to help in our analysis of the Order-of-Magnitude rates we were applying to the 770A PBX system.

We have now received AT&T's suggested rate treatment for the Hotel-Motel Service Package utilizing the 770A PBX system.

Attachments A through D include comparisons of our Order-of-Magnitude rates with AT&T suggested rates for four actual systems we have rated. The AT&T suggested rates include the application of standard Tariff rates for certain service items, such as trunks, message waiting light service, message register service, and TOUCH-TONE Calling Service.

In the four systems we evaluated, our monthly rates ranged from \$3.00 per month to \$45.75 per month more than the AT&T rates, which makes our rates much more in line than we had believed from the information available to us. Also, the AT&T rates include substantial installation charges that do not apply to our Order-of-Magnitude rates.

Attachments:

Competition

The inclination of our customers to change from Bell to non-Bell service is increasing at an alarming rate. Following are some pertinent comparative statistics and comments:

Lost Cases (Company)

1970—one lost PBX or Key Telephone System every 5.4 calendar days—or 68 lost cases.

1971 (first nine months) one lost PBX or Key Telephone System every 1.4 calendar days—or 195 lost cases.

Lost Stations (PBX Stations or Key Systems Telephones)

1970—competition captured a little over 500 stations from us every month.

1971—Today we are losing about 1,000 stations a month to competition.

Other indicators of significant competitive growth—

Major business concerns entering the field of communications. Example—Brown and Root of Houston, sees our large PBX and Centrex customers as a lucrative market and have "thrown their hat in the ring" as a supplier of total communications systems.

Increases in the number of communications suppliers. Example—Fourteen new competitors have emerged in just the last eighteen months in Houston.

Architects are involved in an increasingly large number of cases where customers are considering non-Bell service. These architects assume the role of communications consultants for all practical purposes.

The following steps will help us stay ahead of competition in the future:

1. Handle competitive requests with specialists who can professionally present Bell System benefits.
2. Maintain continuity of "face to face" "servicing" type contacts with customers in our vulnerable markets, i.e., motels, hospitals, etc., and lessen their desire to "shop around."
3. Provide adequate staff support at headquarters and the areas to do a better job of identifying vulnerable customers, tracking specific equipment and vendors and develop aggressive competitive strategy.

EXHIBIT 18.—*Materials Prepared For Use At Presidents' Conference of May 1972*

APRIL 12, 1972.

MR. LINDHOLM: Attached are replies to my recent letter to members of the Presidents' Conference requesting suggestions for the agenda of our May 8-12 meeting. You will recall that my letter asked two questions:

What matters of System-wide significance warrant the top priority attention of AT&T's new management team *now*?

And, for the longer term, what issues confronting our business warrant priority attention by our newly established Corporate Planning organizations?

Thus the attached replies provide a measure of the conferees' sense of (1) the immediacy and (2) the long-term significance of the problems we confront.

I have removed identifications from these letters not to preserve anonymity but to focus attention on what is said rather than who said it.

I hope we can structure our Presidents' Conference to provide for full discussion of these concerns.

A. VON AUW.

Question two: For the longer view, the issue of competition should be high on the priority list, and as a part of this, the old question of "what is our business?" needs to be reexamined.

Your recent letter asked first for matters of broad significance which warrant top priority attention at AT&T now and, for the longer term, the big issues confronting our business.

A second response, still to the first question, which should occupy some attention right now, is to develop a greater awareness of the competitive world. We certainly would benefit from a greater understanding of the competitive nature of our business today by our employees. We have done some work on this in a variety of forms in Pennsylvania and have found an interested and receptive audience.

In the competitive world, the Bell System will have to face the cold facts on the attractiveness and cost value of its products. That is to say, if vertical integration does in fact give us an advantage, we should be able to demonstrate it in our sales price, lease arrangement, or monthly charges. If we are unable to meet the competition on even terms, we should find out how to change that. In this regard, an agenda item which I have mentioned to you before, would be to discuss broader user options, particularly the sale of Bell System equipment to users.

This replies to your memo of March 30 regarding the agenda for the May Presidents' Conference. I offer these thoughts:

Regarding question one—the "now" problems:

2. Can we better define and articulate our position on interconnection, certification, state v. federal dominance in this arena, etc.? During April we may be obliged to express tentative Bell views to NARUC and to the independents on this subject.

3. Should we have a better defined policy on going to usage-sensitive pricing? We talk about it, but we have nothing (or very little) in the construction budget to get there from here.

We need to chart a much clearer competitive course. Decide how much of the market we want, concentrate on it and quit wasting resources and capital on the rest of it.

i.e.—mobile telephone service? Air to ground? Certain intercity data services? Number and type of data sets? Size of the terminal product line for both the business and residence markets—we need to cut our inventory costs for example.

Of high priority is a new posture regarding regulation. How are we going to tell our story to the nation and to regulators so they can understand and assume their share of the responsibility for the nation's communications service. We are on a course of failure! I believe many regulators are actually willing to permit some failures as a foundation for public support they feel they need for allowing adequate earnings. Are we willing for this to happen?

A decision regarding whether in the long run we need to split off the competitive aspects of the business needs to be made and long range plans for how we operate in light of that decision needs to be formulated.

1. What we need *now* is much clearer guidance from AT&T on new customer services—what we should offer and what we should not offer. This question is complicated by the uncertainties arising from competition and the interconnection issue. Over the years we have developed—in the Laboratories, in Western Electric—the resources to respond to new needs, new competitive thrusts. But we need a clearer definition of how those resources ought to be applied. Are we, for example, going to sell directly to the customer? We need an early decision on that one.

This is in reply to your letter in connection with the Agenda for the upcoming Presidents' Conference soliciting my response to two questions:

1. Matters warranting top-priority attention *now*:

C. While "What's our business?" has been almost a continuous subject of discussion for many years, there still seems to be a pervasive lack of understanding of the subject and knowledge of the source of most of our earnings. A strong clarification from the top policy level is required. To do this successfully, it must be the result of a consensus among the Presidents' Conference group and be understood at all levels.

Immediate Concerns

2. Where should we be heading in the Station Terminal Market? Is NAP the best answer?

Following are the comments we have to the two questions you posed in your March 30, letter concerning the May 8-12, Presidents' Conference agenda:

1. Matters of system wide significance that warrant top priority attention now.

a. In re-defining our corporate purpose, what products and services should we offer our customers so that we can perform effectively in the expected economic, political and social environment?

This letter is in reply to your of March 30 asking two questions of great importance.

1. What matters of Bell System-wide significance warrant the top priority attention of AT&T's new management team now?

First, I would list the general subject of meeting competition. A great deal is being done about this, but it does not seem to me properly coordinated nor does it appear that the entire corporate structure is uniformly or unitedly addressing itself to this major problem. I am reasonably certain that we are competing for business which is unprofitable, that we are losing business we should not lose and that we are retaining business we should not retain. We need better cost studies, changes in the system of accounts, an awareness that this is a corporate problem and not a Marketing Department one and a public relations and information program to accompany top management efforts. The recent issue of Illinois Bell's magazine is a good example of the latter. In recent days, we have been able to convince our union leadership that this is a corporate problem and their Executive Board has met with our Marketing Committee in an effort to learn more about the scope of the problem. The involvement of the average employee in concern about competition is something that badly needs to be done and will require "top priority attention."

1. What matters of Bell System-wide significance warrant the top priority attention of AT&T's new management team *now*?

Response to competition on the part of Bell System companies. There is little guidance on what our objective is. For example, in the PBX competition field, I've taken the position that Illinois wants all the business it can get and will use all its resources to get it. Some companies take the position that if saving a PBX means new capital, forget it. Naturally, I don't think I need the guidance, but someone may be wrong here and the subject is at least worth a policy clarification.

In response to your recent request for agenda items and your two questions, I have separated my response into current and long range items. Any of these would be worthwhile, in my opinion, for discussion at the Presidents' Conference.

Current

Station End of the Business:

Cost reduction areas—Western Electric Co., Bell Telephone Laboratories,

Operations

Technological improvements in hardware

Method research to minimize cost—maximize productivity

Pricing—(after the above) to recover cost

As far as long-term issues are concerned, I believe we would benefit by a discussion on pricing. Whatever aspect we choose would be productive.

Perhaps another item would be a reappraisal of our stance on competition. In view of our substantial needs for new capital, is there some prudent way that we can redefine the scope of our responsibility by not trying to compete in areas where others can serve well and, in so doing, reduce our new capital requirements? Equipment on the customer's premises offers this possibility.

Here are some suggestions on possible topics for the May Presidents' Conference:

Matters that warrant top priority attention now

Market coordination and strategy: So we might apply our resources more intelligently and more profitably, better knowledge about the relative profitability of our various services is badly needed.

The following matters of Bell System-wide significance warrant the top priority attention of A.T.&T.'s new management team:

1. Concentrate on getting the Bell System Companies to perform as a System instead of a number of individual entities. This will require policy decisions and statements on such things as—

b. Certification of terminal apparatus by the F.C.C.

c. Sale of inside wiring and terminal apparatus.

d. Network Access Pricing.

The following issues warrant attention by the Corporate Planning Organization:

2. Review our pricing methods to be sure they are consistent with what others are doing today.

Defining the nature of our business is a vital task. We are not a total communications company and the boundaries must be continuously redefined or reaffirmed. We have eschewed the provision of the business machines that connect to our lines, and the store and forward switches that interconnect our lines. Will we also consign the house wiring to the customer? Will we eventually decline to provide CU PBXs? These questions lead towards an evaluation of our role as a retailer, as opposed to a wholesaler, of communications. We are already in the wholesale business, i.e., TWX. Should we extend this to other entities, such as MCI and Datran, and under what conditions? Can we retail a service and simultaneously wholesale facilities to a competitor for that service? As a service industry, we must be clear as to whom it is that we serve.

The entire question of competition is of concern internally. How do we operate a business which is part competitive and part monopoly? This is a different question from that of our public posture towards competition; it embraces how we inform a million employees by word and deed just how they are to act in those philosophically divided endeavors.

As far as our May Conference is concerned, I would personally benefit from a pro and con presentation and open discussion of the question of Network Access Pricing. I have just read John deButts' interview in *Telephony Magazine*. It seems rather obvious that Mr. deButts feels strongly about the end-to-end philosophy of our service offering. The whole question of certification and its ultimate effect on our involvement in the terminal end of our business is one that needs more airing.

In response to your request of March 30, I have the following two suggestions for possible discussion at our May Presidents' Conference:

1. In my mind, our pricing policies deserve our top priority attention at this time. Much has been discussed, but I believe that we should be considering further action as regards present ownership of station equipment, concurrent trials of flexible pricing policies in the residence market, and how best to move from flat area calling provisions which we espoused for the last dozen years back to a more flexible usage-related pricing procedure. Also, the matter of possible changes in our accounting practices involving the capitalizing vs expensing of certain costs warrants our immediate attention.

PRESIDENTS' CONFERENCE "COMMITMENTS," KEY LARGO, FLA.—MAY 12, 1972

Marketing Organization/Strategy

AT&T's marketing organization will be restructured to provide strong leadership to a dynamic total marketing effort involving the full range of our products and services.

An over-all Bell System marketing "strategy" will be developed in the interest of establishing our own initiative in the field as distinguished from "plugging gaps" in response to competition.

Interconnection/Certification

The apparent differences between Bell System viewpoints on interconnection matters expressed to Federal regulatory authorities and those expressed to state regulators will be resolved; we will have *one* policy.

AT&T will develop materials to help the companies convey to regulators and the public the potential long-term public interest consequences of further liberalization of interconnection policy by certification or otherwise.

More broadly, with respect to interconnection matters, AT&T commits itself to the development of a *strategy* that will best assure our continued ability to do our best for the public and do so profitably.

Network Access Pricing

The Network Access Pricing Plan will be fully readied for implementation in the event of certification.

Ownership of Inside Wiring and Terminal Equipment

The EPC will consider whether the Bell System should adopt a policy of outright sale of inside wiring and of terminal gear even at the risk of precipitating certification. Conclusions will be reported to the conferees.

3. What is our business?

I think this is a subject that needs to be brought out and again "dusted off" to see whether or not we are all thinking alike in terms of competition and the kinds of businesses in which we really ought to be engaged and in which we should vigorously compete as opposed to those which might very well be handed by someone else. As a very simple example, I have in mind, maritime service.

4. Competition

While the policy has been pretty well emphasized, I think we need to continue to discuss from time to time how much of an all-out effort we can and will make in the terminal equipment field. Can we really compete effectively in view of the number of competitors who are not concerned about obsolescence or the kind of regulators we have that seem not to want to allow enough depreciation to meet the competition with new models. This will employ large amounts of capital. How much real study has been given to the alternatives?

6. Advertising and Marketing Expenses

Commissions around the country are beginning to question all utilities in this area and perhaps we should have a good discussion on our forms of advertising and our marketing expenditures.

As you can see, there is really nothing new here, but perhaps you might get an idea or two.

Sincerely,

BUD.

CINCINNATI BELL INC.,
Cincinnati, October 5, 1972.

Mr. A. von Auw,
Vice President,
American Telephone & Telegraph Co.,
New York, N.Y.

DEAR AL: Thank you for your letter of September 21st. I don't know how helpful I am going to be, but I am going to do my best. I could reiterate the last three of my four suggestions made about 18 months ago and frankly they would not change one bit.

A. Unbundle our price structure.

B. Station Equipment: Sell, lease or use present system—give the customer the alternatives.

Why should it take us 18 months, and plus the Lord only knows how many more months, to make a decision on unbundling?

Why should it take 18 months, plus the Lord knows how many months, to make a decision on selling our station equipment, inside wiring, and what have you.

Station equipment has been the bane of our existence and one only needs to check as to what portion of our construction programs is composed of station equipment (30-35%) and then inventory the installed plant equipment on any given day to know that it is our trouble spot, for it constitutes only about 15%, not to mention the capital requirements. Why should we not, if we wish to, dispense with station equipment. I am not arguing for or against it here—I am arguing that we should make a decision.

Last, but certainly not least by any means, is converting our flat rate areas to charges based on usage. Again, we have been going along for years and we talk constantly about it, but just how far and how much have we accomplished? I have yet to see the equipment that can measure usage.

Now, for a "last, last" suggestion: we are talking strongly that our installation charges should go up to \$60 and I have no trouble with the general

concept, but I just wonder whether we should not set our installation charges on the basis of a uniform charge to cover line, central office connection, commercial costs, accounting costs, paper, etc., plus the actual field installation costs with a profit. It just isn't fair to charge a customer the same amount if he has jacks in his home as a man who is building a house and we prewire it. It makes no sense and is really contrary to our general philosophy about directory assistance charges.

Sincerely,

NEW JERSEY BELL,
October 3, 1972.

Mr. ALVIN VON AUW,
Vice President,
American Telephone & Telegraph Co.,
New York, N.Y.

DEAR AL: In response to your request for agenda items to be discussed in the Presidents' Conference, I would like to submit the following:

Competition

Although I think we're competing well in the PBX market, we find in New Jersey a definite void in being able to meet competition in the Key market. Problems arise in this market because of glamour features as well as our inability to know where the competition is striking, often until it is too late to be effective.

Certification

Although we discussed this item at Key Largo, I do believe we need further discussion on this item as well as indication of our long range policy considerations.

Network Access Pricing

Most companies, I believe, are in a holding action and awaiting further clarification of our long range plans concerning this concept.

PRESIDENTS' CONFERENCE,
Key Largo, Fla., May 8, 1972.

A. VON AUW

PRIORITIES

Number one is the profitability of our enterprise. Our earnings problems continue to be so critical it is difficult to put a top priority on anything else.

It is a very real question whether current goals, demanding as they are, are adequate. Can we really turn our earnings performance around fast enough to move the stock price to a point where equity financing is feasible? It is difficult to believe that a gradual improvement to the \$4.25 range will move the market fast enough.

Certainly so long as wages, taxes, interest and other costs outpace income gains, repricing must continue. Adequate earnings are necessary to obtain sufficient capital to meet our construction needs—on which, in turn, our ability to provide adequate service depends.

At the same time, substandard service in these days of vocally effective and irritable consumers is becoming so politically unacceptable that it is hampering our ability to increase rates. Thus we confront a mounting dilemma that must be resolved. *How* remains the number on Bell System problem.

Pricing/Rate Structure

It seems obvious that regaining a sustained upward trend on profitability cannot be accomplished by traditional remedies—expense control, cutting construction programs, repricing—helpful as they may be for the short run. We must examine the alternatives.

Obviously we must ask ourselves whether we are fully exploiting all potential cost reduction areas—in the Laboratories, in Western Electric, in operating methods, with a view to minimizing cost and maximizing productivity. At the same time, we must recognize that we urgently need a long-range

look at our rate and tariff schemes in order to devise a viable strategy for the future. More specifically, we need a new and innovative look at the way we provide local service. The problem of controlling and—hopefully—reducing the rapidly rising local exchange costs requires a more searching study of possible usage sensitive pricing schemes that we have had to date.

And should we not, for example, adopt a policy that we will engineer only for peak loads in premium rate periods? And don't we need firm plans to extricate ourselves from the horrors of large flat-rate calling areas?

On these matters the Bell companies must perform as a System instead of a number of individual entities. This will require System policy decisions on such things as charging for directory assistance, certification, sale of inside wiring and terminal apparatus and network access pricing.

At a minimum our efforts to reduce capital needs must include further refinements with respect to that criterion we apply to the timing and sizing of central office and outside plant construction, renewed efforts to improve depreciation schedules and a fresh look at the question of owning vs leasing buildings and motor vehicles.

At the same time, we need to accelerate our exploration of the feasibility of collecting capital contributions from customers at the time of installation, re-assigning these charges—or some portion of them—from capital to expense.

Now two heresies.

The first: to assure coordination of rates of growth in capital expenditures, expenses and revenues, should we consider adopting a policy of relating construction to earnings, state by state? It is difficult to explain to State A that it is not subsidizing State B. Perhaps we should take the position that we will furnish good service to all existing customers but that service to new customers will depend on the level of earnings.

Second heresy: perhaps we ought to reappraise our stance on competition, viewing it not as a threat but an opportunity. In view of our capital needs, is there some prudent way that we can redefine the scope of our responsibility by electing *not* to compete in areas where others can serve well? Equipment on the customer's premises offers this possibility.

Competition

What is our stance on competition? It does not appear that the entire corporate structure is uniformly and unitedly addressing itself to this major problem.

In the PBX field—to take just one example—Company A takes the position that it wants all the business it can get and will use all its resources to get it. Company B on the other hand takes the position that if saving a PBX sale means new capital, forget it. Possibly, although not necessarily, one of them is wrong.

Urgently needed, then, is a coordinated marketing strategy so that we may apply our resources more intelligently and profitably. We are, one suspects, losing business we should not lose and retaining business we should not retain. We need better cost studies, better knowledge of the relative profitability of various services. We need to decide how much of the market we want, concentrate on it and quit wasting resources and capital on the rest of it.

And we need, above all, an awareness that competition is a corporate problem and not just a marketing problem. Involving employees—all employees—in our response to competition requires top priority attention. But how in fact do we operate a business that is part competitive, part monopoly? And how by word and deed do we inform a million employees just how they are to act in these philosophically disparate endeavors?

In the competitive world, we in the Bell System will have to face the cold fact that our success will depend entirely on the attractiveness and cost value of our products and services. If, in fact, vertical integration does give us an advantage, we should be able to demonstrate it on our sales price, the terms of our lease arrangements and our monthly charges. If we are unable to meet the competition on even terms, we should find out how to change that.

Which brings us to the question of who should monitor the equipment marketplace—AT&T? Western Electric? The associated companies themselves? This question is rapidly gaining in importance as the number of outside vendors increases. As it grows in urgency, surely we will be called upon to define—as clearly and objectively as we can—those areas where the advantages of competition outweigh the advantages of vertical integration—and vice versa.

Regulatory Relationships

Not all these questions are ours alone to answer: regulation will have its say.

How, then, are we going to tell our story to regulators so they can understand and assume their share of the responsibility for the nation's communications service? Specifically the increasing restrictions imposed by the FCC are a serious concern. Already roadblocks to filing new tariffs and providing new services, coupled with long delays in the receipt of regulatory approval, are beginning to impair our ability to serve and significantly increase our costs. To reverse this trend we need an aggressive stance on the part of our top management on the national scene. We must speak out strongly for what is right for our customers, the general public.

Separations pose a particularly vexing regulatory issue. In a competitive future how long can we tolerate the illogical methods in use today? Still looking ahead, in a few years we will in all likelihood face the problem of an increasing interstate rate of return and a decreasing intrastate rate of return. What should our response be to the predictable political pressures? What is right economically?

Regulation referees settlements, too. Under present methods, the cost study basis for settlements is resulting in significantly greater costs for us while the "cost-plus" approach virtually guarantees the independents a profit at our expense. There must be a better way. What is it?

What in the final analysis do we want the role of regulation to be? The deepening schism between the state and federal jurisdictions, together with increasing indications of public dissatisfaction with the regulatory process as we know it now, suggests changes ahead in the form and function of regulation. Rather than be caught in the crunch, hadn't we better undertake a thorough evaluation of the issues and options with a view to taking a leadership role in whatever evolution awaits regulation in the U.S.?

Organization

And are we organized for competition? For example, should we consider setting up a new corporate entity for direct customer contacts for installation and maintenance, restricting the operation of the "telephone company" to network management?

Defining the nature of our business is a vital task. We are not a total communications company and the limits and scope of our enterprise must be continuously reaffirmed or redefined. We have in the past, for example, deliberately eschewed providing the business machines that connect to our lines and the store and forward switches that interconnect our lines. Looking ahead, will we eventually consign the house wiring to the customer—and PBXs as well? We are already in the wholesale business—i.e., TWX. Should we wholesale on like terms to other entities—MCI and Datran, for example? Can we simultaneously retail a service and "wholesale" facilities to a competitor offering the same service?

Issues . . .

How should the corporation be organized if we should share markets with others?

What does competition mean to the Bell System's traditional "way of life"?

What are the implications of marketing policy which "provides a customer with anything he wants as long as he is willing to pay for it"?

Are there important new technologies on the five to ten year horizon which can be used to induce entry of extensive new sources of competition?

Issues . . .

Can we define the network as a "natural monopoly" which will remain valid for a considerable period of time?

Can AT&T develop economic and social indicators of the level of performance of the Operating Companies? Can indicators be used to detect System disequilibrium or default?

DISCUSSION

Early in the discussion, the question was raised as to whether we should not consider the sale of terminal equipment as a means of conserving capital and, also, a customer option useful in an increasingly competitive market. It was observed on the one hand—that in view of the fact terminal gear and

its installation and maintenance represent so costly and aspect of our operations that action to this end is essential to maintaining a business of viable dimensions and, on the other, that it would be a step toward making ours a "network company only." Others rejoined to the effect that our best assurance of avoiding the latter fate is to compete effectively in the station market and that the option to sell is a necessary element in our competitive strategy.

Do we not, it was asked, need to look to the long-term consequences of "spinning off" part of our traditional responsibilities, risking thereby a degradation of service for which we would be held at least in part responsible?

Nonetheless, it was observed, our options for significantly reducing future capital requirements are narrowing and this one—plus the option of selling inside wiring—needs to be carefully examined.

There is a very real question as to whether the significantly increased revenue requirements—about \$1.0 billion—that expensing station installations would impose can be achieved in a period when we are already seeking significantly increased rates. Nineteen sixty-eight, it was remarked, offered such an opportunity at the time income taxes were reduced. We need to be alert to another such occasion. It was observed, however, that we need not undertake "the whole thing" at once, that we could begin by expensing line and station transfers.

Wednesday

COMPETITION AND REGULATION

Moderator: C. W. Owens. **Panel:** S. E. Bonsack, R. R. Hough.

MR. OWENS: Competition and regulation are unnatural companions—they do not go well together. One is usually a substitute for the other. In spite of this polarization, however, we find ourselves deeply immersed in both. Because this "mix" raises issues of such complexity we'll want to explore both subjects carefully this morning.

The size and complexity of our business can make it dangerous to generalize. When we speak of competition, it is necessary to pinpoint what we mean by looking at the segments of our total service offerings and by classifying the many forms which competition can take.

In basic exchange telephone service we have no real competition for central office switching or for trunk and loop distribution plant at the present time. They are coming at us in the terminal area, with competitive items on the customers' premises. In the business market, there are losses in PBX's and key sets.

We also meet considerable competition in the "interface" piece of our business, particularly on data sets, although we never have been the only supplier in these areas. And we shouldn't limit our interpretation of "competition" solely to its impact on operating telephone companies—there is also the very capable list of suppliers who make and sell to common carriers—including Bell—the basic kinds of communication gear it takes to supply service—transmission equipment, cable, switching, etc. In fact, there are many fundamental pricing questions concerning products from our own supplier that we should consider today.

In the residence terminal market the competition is more fragmented and harder to inventory. We have not standardized a suitable interface, thus far, to permit legal connection of a customer-provided residence set. But, pressures are continuing to build which makes it increasingly important to decide what our policy should be in this important market segment.

Looking at the intercity area of our business, here the competition is coming on strong. MCI is in business, Chicago-St. Louis, with about 39 customers using 48 circuits. Last week, Datran came to see us about leasing telco facilities for local distribution—they plan to be in business, Houston-Dallas, in 1973. Datran is also interested in a "piece-out" arrangement with us. Right now the FCC has applications from 12 special common carriers involving over 2,000 radio tower locations. According to their applications, these carriers plan to extend services to 80 cities by 1973 and to 183 cities by 1976.

On the regulatory scene, the FCC staff pushes for competition as being in the public interest, claiming that competition stimulates innovation and improves customer choices—and that such benefits outweigh potential losses in economies of scale or possible harms to network users from interconnection. State regulators, however, fear service degradation—separations problems—rising costs to basic users—as consequences of more interconnection and competition.

The scope of our panel discussion today will be to explore with you how competition is trending, what the regulatory environment may hold in store for us, how our response can be best contrived and implemented. Each of you has developed strong opinions and convictions concerning corporate action. Hopefully, our discussions will act to effectively pool our ideas to gain a stronger collective perspective.

Obviously we have a wide range of discussion topics when we consider competition and regulation. Our our esteemed two-man panel this morning, Dick Hough will represent intercity matters and Sam Bonsack will cover the exchange service aspects. They may have questions to amplify certain points, but essentially we want to throw the discussion open to you.

Mr. BONSAK. What is our philosophy with respect to competition? On the basis of discussions with Bell System people in Planning for Profit seminars at Lisle, it is apparent that there is widespread uncertainty on this matter. The consensus among Lisle participants is that a much more vigorous response is needed. Extrapolating from current trends—and in the absence of vigorous countermeasures—"losses" to competitors in the PBX/Centrex might represent as much as \$193 million in annual revenues by 1975.

DISCUSSION

There appeared to be general agreement among the conferees that we are well on the way to developing a fully competitive "product line" in the PBX/Centrex field. The "Denver concept" appears to be working well. Except at more than 400 lines we are abreast of the market—or ahead.

Many customers, a number of the presidents reported, place a high premium on compactness of facilities on their premises. The ability to provide Centrex service from ESS offices provides us a major advantage in this regard.

Some concern was expressed at the prospective waste of energies and resources that would be involved were the Bell companies to attempt to "plug every gap" in the PBX line. We would, it was felt, thereby become vulnerable to smaller suppliers with the flexibility to "attack" on a selective basis. Mr. Bonsack expressed the view that, while we might not be able to match every conceivable customer requirement, we will be able effectively to meet the competition in the small, medium and large PBX fields with six or seven "vehicles."

It was observed, however, that our principal vulnerability to competition lies not so much in our products as it does in our inability or unreadiness to provide the price options customers want, most notably the option to buy. A decision to really compete, it was stated, necessarily carries with it a decision to sell.

But wouldn't a decision to sell, it was asked, "trigger" certification, a development about which many serious reservations remain? And, if that be the case, does it mean that we can't really compete without certification?

Is certification inevitable? If it is, wouldn't we be well advised to embrace it, take the lead in its development, and thereby assure that the process is a sound one?

It was widely observed that these questions urgently require decisions. At the same time it was recognized that the potential consequences of selling terminal equipment and of certification require thorough thinking-through. Might it not, for example, require us to organize separate entities to undertake direct sales and provide maintenance service to customer-owned facilities? In any case, extensive studies will be required to assure the compatibility of our tariffs with the price options we propose. And the impact on intrastate revenue requirements needs to be carefully weighed. For this and other reasons, NARUC is resisting certification.

Do we *really* mean to compete? Mr. deButts observed that this question has already been answered in the affirmative. The real question, he said, is *how*. The matters under discussion here are currently under intensive consideration at AT&T and decisions will be urgently pursued with a view to developing a policy that will permit the sales option necessary to an effective competitive response and that will not at the same time unduly jeopardize the quality of our network's service.

Capital constraints, Mr. Lindholm commented, should not—and, in AT&T's view do not—significantly inhibit our competitive response. It would, for example, have required only \$22 million more in added capital in 1970 to fully meet our competitive opportunities.

Mr. HOUGH. For some months now, MCI has been offering private line services between Chicago and St. Louis at rates substantially below ours—

\$379.50 vs. \$499.00 for a full-time two-way voice grade circuit, for example. In addition Western Union has recently filed rates between Chicago and St. Louis competitive to MCI. What should our response be?

Long Lines and Market and Service Plans are currently studying the feasibility of a private line rate structure involving lower rates for low-cost high-density routes, higher rates for high-cost low-density routes. A major concern—as it is with respect to a direct response to MCI on the Chicago–St. Louis route alone—is the degree of cross-elasticity with message toll.

DISCUSSION

A number of the conferees expressed disappointment that AT&T had not filed an immediate competitive response to MCI on the Chicago–St. Louis route. An immediate response, it was pointed out, would have provided clear notice of our intention to compete. To delay is to risk the prospect that, once one or more specialized common carriers become going businesses, regulatory authorities might seek to assure their continued viability regardless of the economic justification for their survival.

On the other hand, it was pointed out, that MCI does not—and may not for some time—pose a sufficient threat to warrant a basic change of policy without a thorough examination of the consequences, particularly the consequences to our message toll business, which accounts for some 87 per cent of our interstate revenues. Also, nationwide average pricing has served the nation well: isn't it worth a fight to prevent its further erosion, certainly before we breach the principle ourselves?

The conferees generally agreed that a decisive response to the entry of specialized common carriers is required to provide a clear signal—inside and outside the business—of the Bell System's competitive spirit. What remains at issue are questions of timing and strategy. The Executive Policy Committee has set a deadline of September 1 for completion of studies of the various alternatives open to us. Decision is expected shortly thereafter.

SYNOPSIS OF D. E. PROCKNOW'S REMARKS AT BELL PRESIDENTS' CONFERENCE, MAY 8-12, 1972

Recent discussions about Western's prices have prompted me to bring you up to date on the current status of our price comparisons with the lowest general trade.

The attached Chart #1 indicates the findings of the AT&T price surveys. It shows that Western's composite prices are 35% below the *lowest* general trade prices. This over-all favorable relationship has existed for many years. As you know, this price advantage has long been a topic in many rate case proceedings.

From time to time, there are some individual items in the product line that are available from other suppliers at prices that seem attractive to the telephone companies. As these items are identified, they are subjected to directed cost reduction effort aimed at reducing our costs and prices or improving other operating company cost-related factors.

When companies do consider moving to outside sources, all we ask is that they weigh in the balance such things as compatibility, ease of maintenance, life expectancy, and other cost factors which should enter into their purchasing decision. Further, they should look beyond these factors and ask what are the seller's conditions of sales. It is possible that these offerings are very short term or are not available equally to all operating companies and cannot be considered as evidence of an advantageous price to the operating companies.

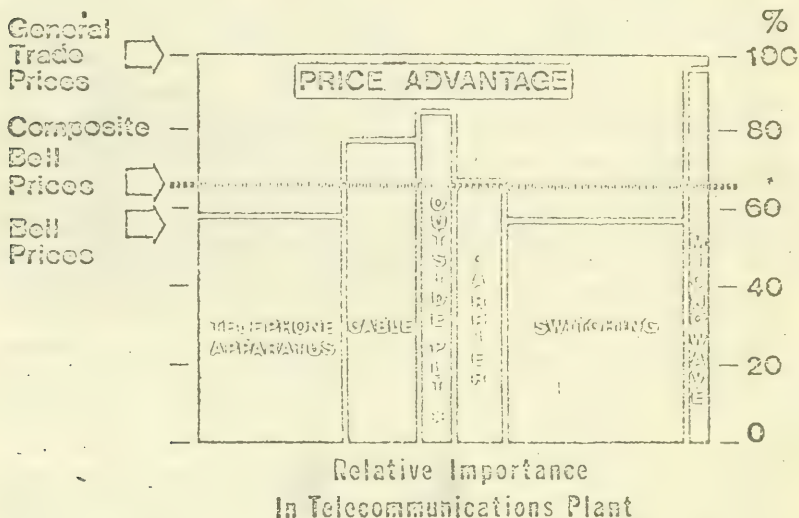
We would point out, also, that in purchasing any Western product there are services which are always included in our price which must be negotiated when dealing with others. Four of these are indicated on Chart #2, and there are others like same-day service on many items, a single price regardless of quantity, the coordination of Bell System requirements, and automatic notification of equipment changes.

As you are all aware, as an expansion of our service efforts, we have established on a nation-wide basis PBX sales support personnel in our Service organizations to give close support to the telephone companies in their customer premise sales effort. Through the increased interaction between our sales consulting organization and your people, we hope to improve our understanding of your needs, your customers' needs, and to provide you with the products and features you require.

Similar support will be provided for switching, cable and transmission products. People assigned to this effort will be announced shortly.

Price Comparison Summary

Current WE Bell Prices as a Percent
of the Lowest General Trade Prices...



*TELECOMMUNICATIONS SUPPLIES

PRESIDENTS' CONFERENCE,
Key Largo, Fla.,
May 12, 1972

CLOSING REMARKS OF J. D. DEBUTTS

I said at the outset of this conference that I would break with precedent and undertake to summarize our discussions at the conclusion of our meeting. Having reached that point, I realize that I may have committed myself too hastily. What you will be hearing from me over the next half hour will not be a summary so much as it will be one man's observations on a number of the key issues that arose in the course of our discussions. In a half hour I couldn't hope to cope with the diversity and complexity of all the matters we have discussed this week. I will, however, make this commitment. We—by which I mean the members of the EPC—are going to review the notes of this conference in detail. We are going to precipitate out of those notes the issues you raised that appear to demand decision. *We are going to organize to decide these matters and we are going to decide.*

Certainly you have fulfilled your responsibility to us in the course of this meeting. Our discussions have been as forthright and candid as any I can recall in my own experience of these meetings. I personally have been delighted with your readiness to say what you think. In return we can do no less than to come up with the System decisions you say are so urgently needed to give this business a renewed sense of purpose and direction. And this is the way we are going to work in the future: What you say needs to be decided *will* be decided but only after you have had a full opportunity to express your views.

Operations

Looking back to Monday's program, I need, I think, do no more than to repeat Bill Lindholm's observation that, pending the development of the

innovative, perhaps even radical, measures that may be required to assure the long term viability of our business, we have no choice but to do our very best to exercise our *traditional* management methods to the fullest.

That you are doing that to good effect is evidenced in the April results that sent me into my little fandango yesterday. I wish I could tell you that those results justify my recommending the dividend increase we so urgently need to prepare the way for the equity issue we contemplate in the near future. They don't. It looks now—on the basis of preliminary results for April and our estimate for May—as if we will be in the position of reporting earnings per share of \$4.01 for the 12 months ending May 31 vs \$4.03 a year ago even though earnings per share for the quarter are up 3 cents.

When we come to report to our share owners again in September, we simply must be in a position to report significantly better results. Our budget calls for it and *you have bettered that budget every month so far.*

Gentlemen, the fundamental problems confronting our business provide us no excuse not to apply every element of sound business practice to assure the earnings we need now. If we don't produce those earnings, we may not have the opportunity to address ourselves to the longer-range problems.

This means that we must aggressively pursue the opportunities for still better expense control that Ed Greber pointed out to us. It means taking full advantage of the systems and techniques that Hubert Kertz and his people have developed to improve the sizing and timing of our construction programs and the management of our inventories. It means sharpening up our depreciation practices, particularly with respect to timely retirement of outmoded plant.

Incidentally, with respect to Hubert's presentation, I could not help but reflect that we have been talking about some of his recommendations for years. *Some* have been adopted by *some* companies with good results. Why not all? What this says to me is that we are *not yet managing as well as we know how.* For example, why shouldn't we *all* be operating on the SxS Re-Use Plan Hubert proposes. It just doesn't make sense not to.

And I am concerned about the steady growth in "months spare." You'll tell me some of it is in the wrong place. *Why* is it in the wrong place? I suggest it is your business to find out. Particularly in outside plant, *50 months spare just doesn't make sense.* Surely we can do better in this field where we have the ability to react quickly and restore inventory when we need to.

Financing

Jack Scanlon's panel on Capital Requirements I found a particularly provocative one. At the outset he pointed out that our capital programs—in contrast to other businesses—are conditioned by service requirements rather than the prospect of profitability. If there was a lesson in this discussion it was that we must make financial realities an integral part of the development of our capital programs from the outset, rather than a consideration that we applique at the tail end of the process.

Mark Garlinghouse led us through an absorbing discussion of one approach—limiting per cent increase in net plant to per cent increase in net income state by state. There is no question in my mind that we must do what Mark by his provocative question was suggesting—and that is to make vivid to regulators and the public the consequences of an inadequate return and, if appropriate and necessary, to prove it by action.

At the same time, the consequences of falling short of the service we are franchised to provide are even more dire. Service, as Ed Greber reminded us, is our only product, our only reason for being. If we don't meet the public's expectations, the public will make other arrangements. But "other arrangements" will have to be made in any event if we don't remain a viable business—that is a profitable one. Over a period of years, then, service and earnings must track.

We have some deep-seated problems with respect to capital/expense/revenue relationships. That is why I have commissioned Neil Owen's people-to-people a Long-Term Financial Planning Model—to put us in a position of identifying in advance the issues on which we must act rather than responding belatedly to immediate pressures. I for one am confident we can think our way out of this one.

As for Alex Stott's presentation on "conserving capital through other means," one lesson that came clear is that "nothing comes free." In considering these

measures, we must watch very carefully to be sure that the burden we place on revenue requirements is supportable, either through increases we generate ourselves or through rate action. We cannot afford a retrogression in rate of return. So, again, our opportunities to make these reforms that are so important, even necessary, for the long term depend on our earnings performance now.

Competition

In our discussion of competition, you raised a number of specific questions. But underlying all of them, it seemed to me, was a fundamental question: do we *really* intend to compete? We have asserted that we do. *Do we really mean it?*

The answer is *yes*.

I feel *very* strongly—and I know Bob and Bill do, too—that we can provide no greater impetus to a revitalization of our business than through a really dynamic marketing effort.

I can tell you now that Bill is taking a new look at his marketing organization with a view to restructuring it in a way and at a level that will provide you really strong support. And I can tell you, too, that we are taking action now to implement a proposal we discussed almost a year ago—and that is the establishment of a Computer Communications Division to coordinate all our activities in the data field.

Now when I say that we really mean to compete, that we really intend to be in the marketplace, I mean with our *full line of products and services*.

I share the concern of those of you who say that we can't hope to cover the entire waterfront, that we can't continue to maintain the R&D effort, the manufacturing capacity and the maintenance capability to meet every conceivable customer requirement—in the PBX field, for example. At the same time I don't believe you can really motivate a marketing effort say let's go all out with the full line of our products and services at the same time that we go about the job of identifying the relative profitability of our various offerings with a view to repricing what needs to be repriced, eliminating what needs to be eliminated and adding what needs to be added to assure our marketing operation is a money-making one.

I feel strongly that "plugging gaps" is a far from adequate marketing strategy. It's playing catch-up ball. We need a game plan. We're going to have one.

Do we look to Western Electric to manufacture *everything* we sell in the course of our total marketing effort? The answer, of course, is no. The supplier who comes up with the right product at the right price at the right time—with assurance of consistent supply—is going to get the business. However, on the basis of Don Procknow's presentation I for one, am convinced that—on the things that count—that supplier is going to be Western Electric.

In passing I want to express my appreciation to Don for the directness and candor of his presentation and for Western's clear determination to support the Bell System's response to competition to the hilt. Western Electric has always been a great outfit, indispensable to our business. Sometimes we've wondered though, whether they fully understood the needs of the service side of the business. With Don at the helm, I don't think we need have the slightest doubt about that. Western's on the team.

The proliferation of aggressive hardware suppliers does mean, however, that we must equip ourselves to provide an objective evaluation of alternate sources of supply. Just how we're going to do it, I can't tell you now. I can tell you that we will set up an organization at AT&T—probably in Engineering—to undertake this job.

Sales/Certification

There seems to be little difference of opinion that to compete effectively in the PBX field we need to offer customers the option of purchasing outright. Our concern centers on whether or not a decision to sell would "trigger" certification.

There does seem to be wide difference of opinion among us as to whether certification would jeopardize our service or, alternatively, provides the best opportunity to protect our service in light of the prospect of liberalized interconnection policies. Admittedly it is troubling that we do not yet appear to have a consistent position on this matter.

We are going to have *one* policy with respect to certification.

To my mind the fact that we have expressed our readiness to explore the feasibility of certification does not mean we have endorsed it. Nor does it mean that we shouldn't urge consideration, not merely of potential harm to the network but of its economic consequences as well.

Why, then, is it not an altogether rational position to state that it will take time to resolve an issue of such far-reaching implications as this one? And why shouldn't we use that time in two ways: (1) conveying our concerns in realistic terms to regulators and the public so that the long-term public interest implications are clear and (2) putting our own house in order by rationalizing our tariffs and developing price tags compatible with those tariffs in the event outright sale seems an appropriate course. Also, we are going right ahead with our N.A.P. project so that—in case certification comes, we'll be ready. As with the MCI question, a precipitate decision now in response to challenges to a thus far not very significant portion of our revenues could commit us irrevocably to a course that we—and the public—might subsequently regret profoundly.

With respect to MCI, the EPC did in fact decide at one point that as soon after their filing as practicable the Bell System would respond with an "exception tariff" that would take account of the changed conditions in the Chicago-St. Louis route. The fact that on maturer reflection the EPC decided to defer this filing should not be taken as a sign of unreadiness to compete. The fact of the matter is that we realized we simply did not have the information on which to make an intelligent decision and in the absence of that information it didn't make sense to commit ourselves to a course of action, involving as it would a breach of so basic a principle as nationwide average pricing, from which there would be no turning back.

In any case, the necessity studies are now well underway that will put us in a position to examine all the alternatives intelligently and decide—not whether we'll compete, that's decided—but how.

What, then, is our stance on competition?

You heard me say that you wouldn't hear John deButts saying "We welcome competition"—and you won't. That doesn't mean I don't know why those words were said. They were said for the same reason Theodore N. Vail said, in effect, "We welcome regulation." They were said to disabuse anyone who might think so of the notion that the Bell System fears competition or isn't able to meet the test of the competitive arena.

However, the *only* supportable criterion that we can apply in developing our position on the role of competition in telecommunications is the public interest. Classically competition spurs innovation, widens customer options, lowers prices. These are the advantages some people say would derive from giving the Bell System a real competitive run for its money.

What this says to me is that, convinced as we are of the virtues of monopoly, we had better not act like one. When all is said and done, our best assurance of maintaining the integrity of the network and the kind of service the public expects of us is not the representations we make to regulators but our own performance, our ability to provide the right products and services at the right price. Falling short in this regard is the surest way to give substance to the arguments of the advocates of liberalized interconnection and unrestricted entry in the private line field.

Our discussion on Wednesday turned on three questions.

Shall we adopt a policy of outright sale of terminal gear even at the risk of precipitating certification?

Should we take the lead in urging certification in the interest of assuring that we get the kind of certification that will permit us to serve well?

And in the intercity field what and when should our response be to the entry of specialized common carriers?

We are going to answer those question and you are going to know what our answers are.

A good many of us came to this meeting with pretty strong views about what those answer should be. However, I would be disappointed if we were to leave it with those views unaltered at least to the degree of recognizing that these matters are a bit more complicated than we had initially imagined. And I would be disappointed, too, if we had not reached the conclusion that these are questions not susceptible to simple yes or no answers, that each must be examined in the light of the overriding question, What is best for the public? What is required of us, then, is not a set of simple answers to a set of simply

stated questions but the development of a *strategy* that will best assure the continued ability of this business to do its best for the public and do it profitably. That strategy, we commit ourselves to produce.

"Image"

Our discussion of the "image" of our business and of its strengths and weaknesses is sufficiently fresh in our minds that it requires no recapitulation from me. Did that discussion get anywhere?

That depends on what we *do* about it, what *you* do about capitalizing on our strengths and minimizing or correcting our weaknesses on matters within your control and what *we* at 195 do about matters requiring System-wide decisions.

I would like to comment on two items that came up in the course of our discussions.

The first is the phrase "management freedom" and how it applies to you. Let me say that it is the policy of this administration to apply no more constraints on your operation of your company than is necessary to achieve System goals. At the same time a recurrent theme of our discussions has been the importance of acting like a System rather than a loose federation of virtually independent satrapies. I hope we can achieve that Sense of System, not by edict, but by the development of the common understandings it was our aim to develop here. If we can sustain the candor of our exchanges here, edicts won't be necessary and all of us will approach every decision that we make in the light of the potential impacts on each other and the potential consequences to our over-all objectives.

Now one matter on which *do* have a System objective and a System policy is equal opportunity. I understand and fully sympathize with those of you who have expressed concern about the difficulties of implementing this policy.

But our policy is clear. Our policy is to obey the law. And the Affirmative Action programs we have developed are aimed at preserving us and you from far worse consequences under that law. I personally believe that, considering all the circumstances, our course is right.

But we at 195 Broadway owe you more than pious expressions of righteousness. We owe you all the help we can give and, if for example, you would be helped by some kind of an orientation program that will help your people understand the changed conditions that gave rise to our Affirmative Action programs, Dave Easlick's people—with and assist from Paul Lund's—will undertake its development.

Conclusion

Now a couple of miscellaneous announcements.

First, in response to what I sense as a real need and I gather you do, too, I am assigning to Neil Owens the responsibility to work with the Advisory Committee to establish BIS priorities and thereby expedite the process of bringing BIS developments to operational reality. As you know, regulatory pressures, as well as our own operational needs, are building up to a point where we must show results soon. To achieve those results, we may have to make some hard choices. I need someone to turn to who can tell me what those choices ought to be. Neil is the man.

Second announcement. Our next "one-day meeting" will last a day-and-a-half. It's scheduled for June 15 and the Laboratories will be our host.

Finally, to round this conference off with another breach of precedent, I am not going to adjourn this meeting as we have every one I have attended with the observation that "we have had a good conference." I don't know whether we have. That will depend on what we *do* about the matters we discussed here. So I'll just go back to the observation I made at the beginning and that is that our purpose here was discussion leading to decision—and decide we will.

In the process of decision we shall have the support of our new Corporate Planning organization whose job it is to come up with reasoned alternatives and—to the degree they can be quantified—their potential consequences. For your part, you have done everything in this conference we could possibly expect of you. Your participation exceeded my most optimistic hopes. *You have been wonderful.*

Let me conclude with a word of appreciation from all of us to Eldon Hanes and his crew—George Zimmercan, Larry Doyle and Warren Burke. You have helped make this a great week.

Finally, I want you to know that I am very proud to be your chairman, not because of the status of the job or the salary but because of the optimism with which I view the future of the System, my dedication to the fundamentals that made it a great enterprise, my confidence in the management team and my job at being a part of *your* team.

My pledge is to do everything in my power to help you do your job effectively and happily. The Conference is adjourned.

EXHIBIT 19.—*Closing Remarks by J. D. deButts at EPC/Presidents' Meeting of August 17, 1972*

The atmosphere at Key Largo must have been particularly heady at the time but I do recall saying to you that AT&T's marketing and sales organizations would be revitalized to provide strong leadership to a dynamic total marketing effort involving the full range of our products and services. And I remember telling you that an over-all marketing "strategy" would be developed in the interest of establishing our own initiative in the field instead of "plugging gaps" in response to competition. In response to these pledges Bill Lindholm and Ed Greber as an initial step have engaged McKinsey and Co. to undertake a study aimed at two major objectives, one to produce immediate results, the other addressed to longer-term considerations.

First, to help identify and implement the steps required at AT&T, in the companies, the Labs and Western Electric to increase the effectiveness of *your* sales organizations in increasing revenues and meeting competition in the PBX, data, and other terminal equipment areas.

And second, to help us think through the major changes that may be required in the over-all organization structure, policies and processes to strengthen our sales capabilities for the long pull.

Now I don't know whether the fact that we are undertaking yet another study will be particularly heartening to you, but if Ed's initial enthusiasm and Bill's are any measure of what will be coming out of this one, it will be a very useful one indeed.

Now to ease the anxieties of some of you who felt that we risked selling ourselves into bankruptcy if we pursued the gung-ho marketing approach that appeals to me, I said that we would undertake the profitability studies that would tell us what sales efforts would contribute to net income and which wouldn't. In confronting this commitment we came up hard against the stern fact of a cost study organization already vastly overloaded with urgent, large scale projects and operating in a field in which basic methodology is still a matter of controversy. What we needed at the outset, then, was some ordering of priorities among our cost study needs and a plan for strengthening our cost study organization and organizing its work in keeping with those priorities. We heard Ken McKay's and Gibby Killoch's recommendations to these ends on Monday of this week. We approved those recommendations and we are on our way.

Next promise: I told you in the Spring that AT&T would establish an organization to provide the companies with objective evaluations of apparatus and equipment offered by outside suppliers. This is an extremely vexing problem, as Horace Moulton's observations on the ITT-GTE case make apparent. In any case, the EPC has in hand Ken McKay's initial recommendations on the matter and, as I seem to recall having said before, we will decide.

Now with respect to interconnection and certification and the like, I told you in May that the Bell System is going to have one policy with respect to certification—the *same* policy in both Federal and State jurisdictions. Bob Lilley has taken it upon himself to perform whatever intellectual head-knocking may be necessary to assure that we have such a policy. Already he has sponsored a number of confrontations among the partisans of the diverse viewpoints involved and tells me that as soon after August 23 as the EPC can meet on the matter it will have the opportunity to concur in what he comes up with. Thereafter we shall address ourselves to the development of the regulatory and public relations strategy necessary to fulfill our policy. In the meantime, I feel we are sufficiently well served by our current stance—that is, a readiness to cooperate in exploration of the feasibility of certification at the same time

that we show ourselves concerned over the significant public interest questions that remain to be answered and that must be answered before we are ready to endorse a further liberalization of interconnection.

In May I told you that, should certification come whether we like it or not, we would be ready with our Network Access Pricing Plan. The work is proceeding apace and the EPC will hear a report on its status in the next couple of weeks.

The question of the appropriateness of the sale of inside wiring and the sale of terminal gear has yet to be addressed by the EPC, although we have teams working on both topics and hope to hear from them soon.

EXHIBIT 20.—*Speech of Paul M. Lund on Public Relations*

The chairman has challenged us to precipitate a great national debate on a subject about which, unfortunately, few people outside this room give a damn.

How to move the public from complete indifference to the concerned action that only the pursuit of self-interest can engender is our joint task.

To begin, I offer this observation by Vannevar Bush:

"It is about time," Bush said, "that the American people, and hence the Congress, got it through their heads that we have two systems of industry—active competition and regulated monopoly. Both are necessary and beneficial. But they can't be mixed."

Getting that message through lots of heads is the job that faces us.

(I wish Dr. Bush was read more widely.)

Dean Burch said in August that, "Wherever it leads, Carterfone has at least meant a dramatic increase in consumer options . . . and new opportunities have been created for imaginative entrepreneurs—and that can't be all bad."

We are setting out to prove that we know precisely "where it will lead" and that it can "be all bad" for the average telephone user—that it will lead to lower quality telephone service at higher costs to the consumer.

We know that. But it is clear that each public statement we make in this matter will reinforce our commitment to that position before we have complete factual data to support it.

And in that connection, Chairman Burch made another observation.

He said that he had been forced to conclude that "the ability of engineers and economists to provide hard, objective information before the fact is largely a myth. More often than not, the Commission has to fall back on logic, intuition, prayer, and fundamental principle in reaching major decisions."

Our fundamental principle is the common carrier concept. Its logic is total responsibility for the provision of end-to-end communications service at reasonable cost.

Our prayer is that the Commission will not rely on the intuition that the deferral of certain aspects of the decisionmaking process to the marketplace—allocation of resources, for example—is "both a good and a necessary thing."

If it is our self-interest that compels us to speak for the interest of the public at large, then we will have to translate our purpose into an idiom understandable to the general public and to people whose decisions are affected by the opinions and attitudes of the general public.

What we are mounting, at least in academic terms, is a challenge to the concept of pure competition and its entire intellectual rationale.

Again in academic terms, we are challenging a sacred cow: the market structure approach to competition. We are or will be saying that this approach to our industry is not only inferior but impossible.

Contrary to the opinion of Dr. Bush, proponents of the market structure approach to competition claim that it is possible and desirable to mix competition and regulation without doing violence to the principles of either mode.

We say that's nonsense. We say that the result of mixing competition and regulation—especially if the bartender is the FCC—will be that most unpalatable concoction, government enforced cartelization of the telecommunications industry.

Now we can use that sort of language in talking privately to economists and regulators, but it would win few converts among politicians and opinion

leaders whose belief in the virtues of competition is no less compelling because it is basically visceral rather than intellectual.

Let me give you a couple of examples of the sort of language that transcends both sense and experience and appeals directly to folk wisdom:

"The policy of promoting competition often dovetails with the promotion of political and social goals. The concentration of economic and political power has traditionally been seen as a threat to individual freedom. Under competitive market conditions, economic power is fragmented—no more firm can control prices or supply.

"Political power is also decentralized with competition, because there is no need for massive government regulation if there is no monopolist. And the individual has vast freedom of action in his economic affairs—for which no government permission is required. The promotion of competition therefore supports the American ideals of both individual liberty and limited government intervention."

The man who made that statement is Thomas Kauper, assistant attorney general of the Justice Department's anti-trust division.

You notice, of course, that Mr. Kauper carefully sidesteps the conclusions to which his own assumptions inevitably lead. Namely, if it is the function of his division to promote competition in American industry generally—and specifically in our industry—then it follows that a corollary function is to promote a degree of deregulation that is at least commensurate with the extent to which an industry is demonopolized.

If he is right about the unalloyed economic benefits of competition, then the closer particular markets approach the competitive ideal, the less the need to require common carriers to meet their traditional obligations. The imposition of these objectives on common carriers conducting a decreasing proportion of the total telecommunications market can only serve to intensify the competitive disadvantage of the common carriers—both by requiring them to perform tasks and incur costs that their rivals don't, and by enforcing a set of regulatory procedures that prevents rapid response to changing circumstances.

But Mr. Kauper and, as you know, Mr. Strassburg of the FCC's common carrier bureau, do not contemplate free competition in the telecommunications industry. They contemplate instead a form of regulated—or contrived—competition.

There is a reasonable explanation for Mr. Kauper's and Mr. Strassburg's failure to recognize or articulate the implications of their assumptions about competition.

The explanation is that they are—Mr. Kauper by profession, Mr. Strassburg by disposition—anti-trusters, and it would be foolish of us to ignore the popular appeal of anti-trust slogans.

Anti-trust in the United States is a form of national religion. Unlike the merely theological religions, the propagation of this one doctrine by public means is entirely constitutional.

(Your children may not be able to recite the Lord's Prayer in school, but the ACLU probably would defend their right to pledge allegiance to the Clayton Act!)

We should recognize that the rationale that animates anti-trust practice and law is very much in the American grain.

Indeed, the whole American way of life is believed by a vast majority of our fellow citizens to depend on it. It is the only firm guarantee of pluralism, the only defense against overwhelming private power. Public authority having been deliberately weakened by division—namely, the tripartite separation of Federal and State powers—private power must be divided, too.

In other words, if you can't lick it, or if you fear it, fragment it—atomize it.

We should recognize, too, that the anti-truster's faith in competition is not really so keep as is professed. Competition is to be trusted only as long as it appears in the form—and produces the market structure—that the true believer postulates as proper.

This leads us to believe, for example, that having made its decision in the specialized common carrier docket, the FCC cannot allow the specialized carriers one of the freedoms implicit in genuine competition: namely, the freedom to fail. That's why we have not received permission to file our Hi-Lo tariff.

It would bring about real competition in the provision of intercity private line services, and that is not what the Common Carrier Bureau wants.

Moreover, the true believer regards anti-trust laws as the constitutional framework of the economy. Those who hold this view—and I count among them Mr. Kauper and Mr. Strassburg—believe that business in general has grown too large, that true competition can survive and operate only in an economy with numerous smaller firms, and that the function of the anti-trust laws, the function of modern regulation, should be to restructure the economy into an aggregation of smaller firms.

Most of those who hold this view have a genuine and sincere fear of big business. It is called "megalophobia," and before we turn up our noses at its irrelevance, we ought to remember that those who share it can quote Thomas Jefferson to support their contention that bigness per se is a curse.

Let me return briefly to Mr. Strassburg, who is anything but subtle in warning the telephone companies of the sort of corrective action the government might take if, and I quote, "the telephone companies abuse their monopoly power to throttle meaningful competition by others into competitive markets."

Although that remark was made in a speech to the Organization for the Protection and Advancement of Small Telephone Companies, it is obvious he had us primarily in mind, particularly in his closing statement:

"Clearly, in the circumstances, all members of the telephone industry would do well to pursue a policy of forbearance and accommodation rather than heavy-handed rivalry in fashioning their response to competitive prospects."

Mr. Strassburg appears to have forgotten that "heavy-handed rivalry" is another name for competition. But consistency has never been one of Mr. Strassburg's hobgoblins, as witness the stunning disparities between the FCC's decision in the specialized common carrier docket and its second report and order on domestic satellites.

As you might expect, when Mr. Strassburg directs his remarks to the public rather than to us, he affects a sweet plausibility that ostensibly is as American as apple pie.

Who, for example, can take issue with his statement that "consumers will benefit if a free market is established for the manufacture of telephone equipment and hardware?"

I agree with Ed Larkin of the New York Public Service Commission that such broad-brush economic platitudes are most aptly characterized as "capitalist dialectics."

I agree with him, too, when he says that "fifty years of progress and excellence of service in regulated telecommunications belies the validity of these free-market generalizations."

And I heartily agree with him when he says that "the total lack of popular demand" for certification makes the vigor of its apostles suspect "at the very least."

Unfortunately—as we all know—this issue is not going to be won or lost on the basis of which side is more adept at manipulating economic dialectics.

It will be won or lost, I'm convinced, by our proving to American Consumers that they—and they alone—are going to foot the bill for certification; that they and they alone will suffer the consequences of the slow but deliberate sabotage of the common carrier concept.

If the typical American Telephone user asks one question about certification, it will be, "What's in it for me?"

And we have to be very explicit in defining what is not in it for him as compared to what is in it for him if the common carrier principle is preserved.

What do we have going for us?

I'd argue that we have positive performance going for us that will help us shift to the backs of its proponents the burden of proving that certification would indeed benefit all customers and not just a few entrepreneurs.

We have the superior performance of the network under common carrier operation going for us.

We have the unmatched record of innovation in the telecommunications industry under common carrier operation going for us.

We have the high quality and low cost of telecommunications in the United States under the common carrier operation going for us.

We have customer satisfaction with the quality and cost of service under common carrier operation going for us. More than 82 per cent of the people polled in our Public Overview Study for 1973 rate their service good or excellent; 94 per cent find their service fairly or very dependable; 75 per cent feel that they usually or always get their money's worth out of the services we provide; and 76 per cent believe that our prices are reasonable or very reasonable.

In effect, we have the experience of the vast majority of our customers going for us.

It is that experience that we tried to capitalize on in preparing material for your public and employee relations departments and for your public affairs and key contact people. I'll discuss that material in more detail a little later.

What do we expect of you?

The chairman told NARUC two weeks ago that we were ready to test our convictions against those of others.

It's pretty obvious to me that there will be no testing, there will be no public debate on this issue, unless you make it happen.

The essential dialogue on certification and interconnection cannot take place out of earshot, between a faceless official of the FCC and the emissaries of the parties with an interest in the business at hand. If this happens, no one—neither the Congress nor the public—will know, before it's too late, what the issues really are.

Despite our past experience and perhaps present hang-ups, we have to understand that the increased range and subtlety of the relationship between the public and the private sectors have made it less feasible to govern or regulate effectively by decree, unless we allow ourselves and the public to be bullied into arrangements that will satisfy no one except the dogmatic proponents of competition for competition's sake.

It's a sad commentary on the clarity of the average corporation's perception of political reality that in the pursuit of public purposes, private organizations like ours—organizations on which the government depends for active collaboration over a widening range of its activities—more often than not play little part in the overt democratic process. And by that I mean the process of seeking out allies, probing and maneuvering for active consensus.

It used to be and may still be the fashion in our business to say that regulatory battles aren't won in the news media. Maybe so. But they sure as hell can be lost there.

It may be useful to remind ourselves that the political routes—the public route, in other words—potentially is the path that will lead us most safely to success in this venture. Because, as you know, there is a distinct difference between the politician and the typical administrator who sits as a member of the Common Carrier Bureau.

Most of these administrators have never fought an election. They have little taste or sympathy for the processes of representative government. They instinctively resist the suggestion that they should be made accountable to the general public.

And isn't this precisely what we are trying to do—make the Common Carrier Bureau accountable to the public for the public consequences of the policies it is pursuing before these policies become inextricably embedded in the regulatory process?

I am convinced that the related issues of certification, interconnection and competition in our industry inevitably will be lost unless we insist on this accountability: unless we seek out our allies—the general public and its representatives; and unless we probe and maneuver for an active consensus.

If it is our lot to act, if you will, as the public ombudsman on these issues, then we must mobilize public opinion squarely behind us.

This will mean a public affairs and public relations effort of unmatched sophistication and intelligence. And it's been my experience in this business that unless we have the full and active support of the chief executives of all the companies, we'll wind up with a program of unmatched mediocrity and unintelligence.

One of the hardest aspects of the job will be to maintain the interest and activity of our people over a prolonged period of time. The battle lines may

be drawn, but this will not be but a one-week blitz. Rather it will be a long and hard-fought campaign.

In the policy statement on interconnection that is included in your binder—under Tab 1, I believe—there are two significant declarations. One is a declaration of fact, the other a declaration of need.

The declaration of fact reads:

"Studies of the impact of customer-provided terminal equipment, while not yet complete, all point to the prospect that proliferation of such equipment will adversely affect operations, increase costs and impair customer service . . . in light of the impact of further CPE development on the quality and cost of service for the average telephone user, the extent and terms of interconnection of such equipment with the common carrier network should be clearly established as matters of state jurisdiction."

The declaration of need reads:

"An important aspect of this policy is the need for all System companies to participate in a program to develop understanding of the values to the public of the common carrier concept and the prospect of impairment of those values posed by competition."

So where and when do we begin?

Let's begin by reminding ourselves that, as I said earlier, this will not be an isolated skirmish or a rearguard action, but a series of battles that may go on for several years.

This will mean all of us—separately and collectively—have got to engage ourselves in the fray.

And the time to do so is now.

Steps must be taken to stop the Juggernaut of interconnection and contrived competition.

Three of those steps will be taken within the next week or so. Namely:

Filing our petition for evidentiary hearings on the specialized common carriers—in effect, this is the call for the moratorium John deButts demanded in his NARUC talk. The filing will be made tomorrow.

Next is our petition to deny the request of ITT's creature, United States Transmission Services, to enter the intercity private line market. This also will happen tomorrow.

Another important step will be our filing of briefs challenging the public benefits of certification and further interconnection. That will happen on October 17.

These three steps are extremely important news pegs internally and externally. We can control the internal dissemination, but I sure would like to see press and TV coverage which highlights the stake of telephone customers in these actions.

In the sense, the public debate already has begun.

The first salvos, which neatly boxed the target, were fired by the chairman in his NARUC talk, which has been distributed and quoted widely inside and outside the business.

And, as you know, some contacts already have been made by our and your public affairs people.

Your personal help and that of your key people is needed to launch a major face-to-face contact program.

Who is best able to carry our arguments for preserving the values of the common carrier principle to state governors and legislators?

You are.

Who is best able to carry the same arguments to Federal legislators?

You are.

Who is best able to urge on and support our managers and public affairs people in making the key contacts?

You are.

Who is best able to insure that people in your companies steep themselves in these issues and prepare themselves to debate them effectively and convincingly?

Again, you are.

Because the proper groundwork has yet to be laid with leadership publics. I don't believe now is the time to initiate a major consumer ad campaign.

Such a campaign is, however, being developed, and it will come on line when and if it's needed.

Let me run down the list of public relations and public affairs materials you have in your binders:

1. A policy statement on interconnection;
2. An agenda of upcoming events;
3. A public affairs "talk from" piece on interconnection, and certification;
4. Two public affairs "leave with" pieces—one of interconnection, the other on the specialized carriers;
5. A background paper entitled, "Interconnection, Certification and Service";
6. An AT&T press release;
7. A list of hard questions and, we trust, good answers;
8. A Management Report to be issued in conjunction with our October 17 filing on certification;
9. An article on certification for employee newspapers;
10. A white paper on the adverse consequences of competition in the telecommunication industry;
11. The letter OTP sent Dean Burch on mobile telecommunication services—it contains some distinctly "Strassburgian" passages;
12. An address Dean Burch made to the American Bar Association in which he sounds very much like Thomas Kauper;
13. Mr. Strassburg's remarks to the Organization for the Protection and Advancement of Small Telephone Companies;
14. Southern Bell's filing on North Carolina's decision to prohibit interconnection;
15. The paper outlining the Justice Department's position on the North Carolina case;
16. A list of the parties to the North Carolina case;
17. And, finally, a late starter, our brief in the NATA case.

As time goes on we'll keep the ammunition coming with equally relevant material, analyses and action documents.

I'm not about to give you a "Go in there and win one for the Gipper" pep talk. I probably wouldn't get out of here with my scalp if I did. But if we believe our convictions can stand the test of public debate, and if we believe that this business exists to serve the public, then I believe we ought to go out there and win this one for the public.

This is pre-eminently a grass-roots effort we're undertaking because it is at the grass-roots that the impact of certification and interconnection finally will be felt.

And it is at the grass-roots that the political process begins—and this is where we need your help most . . . in municipal offices, in state houses, in governors' mansions . . . at meetings of civic clubs, engineering societies, service organizations . . . in newspaper editorials, local TV talk shows . . . seeking our allies, probing and maneuvering for consensus.

Do we stand to be accused of lobbying for our own point of view? Do we stand to be accused of pretending to protect the interest of the telephone users when in fact we're just protecting our bottom-line?

Of course we do. But when we are so accused, it might serve us well to recall this definition of democracy:

"Democracy is a competitive political system in which competing leaders and organizations define the alternatives of public policy in such a way that the public can participate in the decision-making process."

Up until now, gentlemen, the public has had no say on the serious matters on which we hope to initiate a great public debate. Don't you think it's about time the public had its say?

Thank you.

EXHIBIT 21.—*Excerpts of Testimony of Richard R. Hough, FCC Document No. 19129, A.T. & T. Interstate Rate Case*

* * * * *

Question. Do you know what in paragraph 6 Mr. deButts had in mind when he suggested "On the things that count" Western Electric would be the supplier?

Answer. There are a number of things that are in the heart of our network that are vital to being able to provide the kind of service that we must look at the price. Many of them which are obtainable nowhere else, and these are the things that are absolutely essential to our continuing in business. I would think he meant by that these are the things that count.

Question. His example in paragraph 4 was PBXs. Would his be one of the things that counts?

Answer. No. We have purchased PBXs elsewhere, and from my discussions with Mr. Whalen and his marketing people, they intend to be looking at the full gamut of available products, whether it is Western or some other manufacturer. But I think what Mr. deButts was doing was to point at the tremendous track record of Western in stepping up to meet the demands of the system and with the teamwork of the laboratories and Western, they have done a tremendous job over the years, and he expected them to continue to do a tremendous job.

Question. But not plug every gap, as the phrase is used here?

Answer. Where is that?

Question. That is in the fifth paragraph, sir. He says, "I feel strongly 'plugging gaps' is a far from adequate marketing strategy." In the PBX line I take it that you don't intend to plug all the gaps. That was not the gist of his comment here.

Answer. No, the gist of his comment is that what we intend to do is to examine the market very thoroughly and go out and provide services that are needed, looking well ahead to the future and be ahead of the market and not trying to, as he also says, "playing catch-up ball." In other words, we expect to be leaders.

Judge KRAUSHAAR. How do you understand this to square with what Mr. deButts is quoted recently as saying on the subject of competition? I think he referred to competition as sort of a religion with some people. How does this square with that?

The WITNESS. There are those who speak in a theoretical way of competition for the sake of competition.

Judge KRAUSHAAR. Isn't he talking about competition for competition's sake in this very speech back in 1972?

The WITNESS. No. He is talking about the actual situation we are faced with in the PBX field and similar terminal crises.

Judge KRAUSHAAR. He says, "We really intend to be in the marketplace, I mean, with our full line of products and services." That is competition for competition's sake, isn't it?

The WITNESS. That is not competition for competition's sake. It is competition to meet a situation that we at that time and today see facing us.

One of the problems is that the word "competition" is used rather loosely these days. They speak of competition in the private line field. Yet, at the same time we have yet to be permitted to compete. We pushed strongly for a hearing on that. Docket 20,003 has been established for that purpose and we hope for the first time these things will come out on the record and a conclusion will be made on that.

* * * * *

Question. If we rolled the clock back and did away with competition entirely, presumably that source of innovation would dry up; isn't that right?

Answer. There is still a substantial independent part of the telephone market which has been supplied by these outside suppliers for many years.

The other thing I might say is the Bell System has brought a substantial number of PBXs on the outside and we would expect to continue to buy PBXs on the outside.

In the years past, we have not purchased very many because there has not been much of a choice. But as the choice increases, the operating companies have the option of buying where they want, so I would expect there would be that market in addition to the independent market.

Judge KRAUSHAAR. Has this outside market at all stimulated the Bell System to innovate more than it had in the past?

The WITNESS. In the area of PBXs and data modems, I would say yes.

Judge KRAUSHAAR. To that extent then the public benefited from that competition?

The WITNESS. Yes, sir.

EXHIBIT 22.—*Stanford Research Institute Report Re Insight Into Telephone Interconnection Industry*

ABOUT THIS REPORT

Telephone interconnection—private ownership of telephone systems which are connected to the public telephone network—has existed in Europe for more than 50 years, but the U.S. market did not begin to evolve appreciably until after 1968. The Federal Communications Commission (FCC) Carterfone decision in that year disallowed telephone company prohibitions on subscriber-owned equipment. Since then, telephone interconnection has become one of the fastest growing communications industries in the U.S., posing a threat to the business equipment market of established telephone operating companies. Its rapid growth has stimulated worldwide interest.

The major purpose of the report is to provide an insight into this dynamic market and the participating companies. The primary focus is on the U.S.; the status and implications of interconnection in selected other countries are covered in a separate section.

The report is intended for a broad range of readers, including:

- ▶ Executives and lower level managers of companies that are current or potential competitors in the interconnect industry
- ▶ Policy makers, planners, and corporate development personnel in any related industry
- ▶ Communications managers in major corporations
- ▶ Investment community personnel who follow activities in the communications related industry

Readers who want more extensive information on this subject are invited to make use of inquiry and consultation privileges offered by the Long Range Planning Service. Please refer to the inside back cover for further details.

The telephone interconnect industry as defined in this report essentially comprises the manufacturers who produce telephone equipment and the suppliers who sell or lease, install, and service private business telephone systems for the end user. Such systems are offered in place of Bell and independent telephone companies' equipment. The specialized common carriers and the data equipment industry are not included in the telephone interconnect market as defined here, although they occasionally join forces with interconnect companies on regulatory issues, engage in related legal action, or appear before the Congressional committees concerned.

PBX (private branch exchange) and key systems are the two fundamental products of the telephone interconnect industry. These systems include telephone sets, attendant operator consoles, and intercoms as the basic components. Auxiliary equipment (such as paging devices, automatic dialers, call restrictors, and recorders) is not considered a part of the basic interconnect market as defined in this report. However, a brief description of the major auxiliary or peripheral products and a list of manufacturers is provided.

BACKGROUND

Competitors for Telephone System Market—Equipment Manufacturers

When the Carterfone decision gave birth to the U.S. interconnect industry, U.S. manufacturers other than the Bell System's Western Electric were providing equipment primarily for the independent telephone companies. Most of this equipment was essentially similar to Western Electric's pax and key systems, and the features offered had not changed significantly for a decade. On the other hand, Japanese companies and some European concerns had been producing and marketing in

to connect systems abroad for several years. With assistance from American suppliers they made minor modifications to their basic lower priced equipment, mostly adding features that were not generally available in the U.S. These moves allowed Japanese and European com-

panies to capture more than 75% of the U.S. interconnect market for rnx and key equipment—not including PBX stations, by the early 1970s. Primary manufacturers include OKI Electric, Nippon Electric, and Nitsuko of Japan, and L. M. Ericsson of Sweden. Nitsuko

GLOSSARY

Attendant console. A centralized, desktop or floor-mounted console that utilizes push-button keys or patch cords for control and connecting functions.

Capacity or capacity lines. The maximum number of primary station (or extension) lines available for a given rnx model or cabinet size.

Central office. The telephone company location serving a specified geographical area and containing switching equipment that connects customer trunks or outside lines—also called an exchange, end office, or local central office.

Centrex. A type of rnx system tariff offering that includes such advanced features as direct inward dialing, bypassing the rnx operator and automatic identification of outward dialing stations.

Crosspoint. The contact points in the switching matrix for network that establish or break connections of selected signal path wires.

Extension. A rnx telephone station or an additional telephone set on the same line, but at a different location from the main station.

Federal Communications Commission. A board of seven commissioners appointed by the President under the Communications Act of 1934, having the power to regulate interstate and foreign electrical communications system operating in the U.S.

Key. A small switching device, operated by pushing a button or lever, usually constructed of flexible springs.

Line. Usually the talking path, on the subscriber side or interface to a switching system, as opposed to the trunk or central office side. The line terminates in one or more subscriber stations. The term "subscriber line" can also refer to trunk circuits used instead of subscriber lines.

Line relay or relay. A technique using solid state components to delay or reduce the processing time of a signal entering a circuit chip.

Main station. The point at which a subscriber's telephone is connected to the outside trunk or line where calls can be originated or answered.

Matrix. The switch portion of a switching network, in which a specified input row has access to a specified output column through a crosspoint placed at the intersection of the row and column.

Message storage and retrieval switching. The technique of receiving a signal line message, storing it until the outgoing circuit is available, and then retransmitting it to its destination.

Multiplex. Combining signals into a common signal for reduced path transmission in such a way that they can be reconstructed to their original form at the receiving end. Time, space, or frequency division techniques can be used.

Register. The switching equipment device that receives the dialed impulses and controls the subsequent switching operation.

Relay. A device for making and breaking circuit connections or varying circuit characteristics. It is operated electrically or magnetically.

Series 100, 200, 300 features. AT&T designation for a group of features offered on their rnx product line. Series 100 has the fewest number of options while Series 300 provides the most advanced features of the three.

Station. The point where the telephone network terminates in a telephone instrument or other associated subscriber equipment.

Supervision. Indication of the off-hook (in-use) or on-hook (idle) status of telephone connections.

Switch. An assembly of crosspoints to make designated connections.

Switchboard. A console on which switching operations are carried out by operators.

Trunk. A line going directly to the central office exchanges and into the public network.

Variable Telephone Service rates. A telephone company service presenting a flat rate monthly charge for toll calls. There are six service rates available, seven based on the distance called. In addition to the flat rate there is a measured rate offering based on number of hours used.

Waiting times. The actual number of times a subscriber is put on hold or in a queue, even for a station. Excess waiting times in various capacities are considered a major problem in many companies. Some subscribers are given priority in waiting times, and others are given a "wait" or "hold" time.

alone had about 65% of the U.S. 1973 key system interconnect market.

OKI and Hitachi have U.S. affiliates that assemble equipment; for example, OKI of Japan owns about 40% of OKI Electronics of America. Consequently, part of the Japanese output may also be considered as U.S. in origin.

Imported products are used not only by interconnect suppliers, but also by several telephone operating companies. In some cases, the telephone companies are using identical products to compete against an interconnect supplier. Outside of the Bell System, telephone station equipment is manufactured primarily by IRT and Stromberg-Carlson, and sold through another level of distributor such as Graybar or North Electric Supply.

The major interconnect manufacturers, ranked in order of estimated 1973 sales to U.S. interconnect suppliers, are:

Company	Manufacturing Locations
OKI Electronics of America/OKI Electric of Japan Nippon Electric Company Hitachi Nisusens*	Japan and U.S. Japan and U.S. Japan and U.S. Japan
International Telephone and Telegraph (ITT) L. M. Ericsson Northern Telecom (subsidiary of Northern Electric of Canada) Stromberg-Carlson	U.S. and Spain Sweden Canada and U.S. U.S.
North Electric (subsidiary of United Telecommunications) Fujitsu General Telephone and Electronics (GTE) Automatic Electric	U.S. Japan U.S.
North American Philips-Norelco CIT-TELUX Iwatsu Mitsumi Siemens Lynch Toshiba	Netherlands and U.S. France and U.S. Japan Japan U.S. Germany U.S. Japan

*Key systems only; distributed by TIE Communications, Inc.

†Company not included in Telecommunications Telephone Industry in distribution of Commercial equipment distributed by Reliable Electric.

‡Key systems only; distributed by Stromberg.

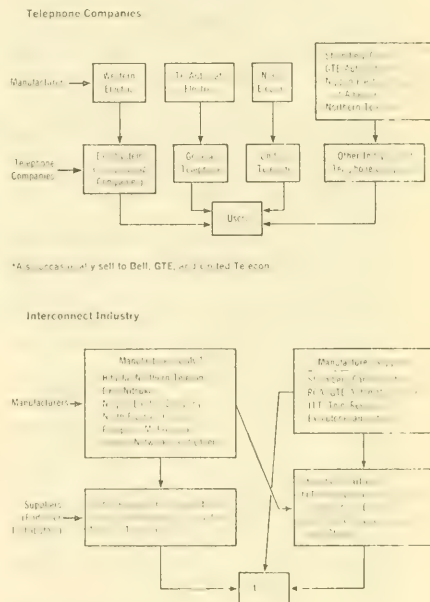
§Key systems only; distributed by Telecommunications Sciences Source: SRI

In addition to the above established manufacturers of PAX and key systems, several U.S. companies, such as Tele/Resources, Litton,

and Executone, have recently begun to manufacture new solid state systems and market them directly to end users. Several other manufacturers, such as the RCA Communications Division and Wescom, are building new products but marketing them instead to telephone system suppliers. At least five major foreign manufacturers besides those listed are reported to be developing products for the U.S. market.

(Continued on page 5)

Movement of Systems



Telephone systems and components

BASIC TELEPHONE SYSTEMS

PEX Systems

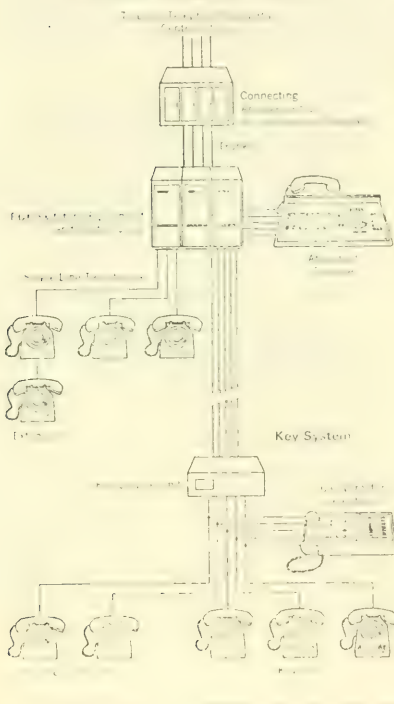
Telephone companies refer to all customer located exchanges connected to the public trunk network as branch exchanges (BX's). Branch exchanges are distinguished by the number of automatic systems referred to as PEX's or EX's.

A PEX is a stand alone system used for handling internal and external communications within an organization. The PEX requires an attendant to connect both incoming and outgoing communications, whereas a PBX reduces the attendant workload by requiring the

operator to connect only internal calls. Incoming and outgoing calls are routed directly to the extension of the called party. Other PEX's may provide even more sophisticated features than the basic system, such as direct extension to the outside.

- **Stand alone systems**—the basic stand alone telephone system. The basic stand alone system consists of an extension telephone and a central office trunk station. The extension telephone is connected to the central office trunk station via a trunk line. The central office trunk station is connected to the public trunk network via a trunk line. The central office trunk station is also connected to the public trunk network via a trunk line.
- **Trunk circuits**—the telephone company central office line that connects the PEX with the public trunk network. The trunk circuit is a dedicated line for each PEX to ten station lines.
- **Attendant console**—a device on which the attendant or inside operator can complete or transfer calls, determine which lines are busy, and provide other services, such as message taking, paging, and conferencing.
- **Telephone instrument**—a telephone instrument capable of answering one or more station (or extension) lines, including standard telephones as well as those integrated with intercoms or speakerphones. Where the user requires more than one extension, the station lines may be connected to the telephone instrument via a pushbutton. The pushbutton is used to indicate the station line being used. Key telephones are often used in both PEX systems and stand alone key systems.

PEX System Including Key System



Key Systems

A stand alone key system is commonly used by smaller organizations that require from one or two to 40 telephones and from one or two to 18 trunks (central office lines). Rather than the more complex PEX, a key system utilizes a simpler key service unit (KSU) which connects the outside subscriber line directly to the user extension telephone (without a dial access). It also coordinates the button lighting, intercom, and holding signals for each telephone station. In most applications (under ten phones) there is no single attendant console, but this function can be performed by any key telephone set or a "call director" (a key set with 12 or more buttons).

Unlike PEX's, key systems do not randomly select trunks for outgoing calls. Further, an intercom is usually incorporated into the key system by connecting one of the pushbuttons on each telephone to a common line rather than to a trunk line. This approach permits the user to dial or buzz another station, without going through the public trunk network.

Intercom Systems

An intercom system is for internal communications only. It can be built into the basic telephone system or operate as a distinct internal system with separate phones, loudspeakers, and wiring. If it operates as an independent system without a connecting arrangement, it is considered to be auxiliary as opposed to interconnect equipment. Some privately owned separate intercoms may be tied into telephone company noninterconnected PEX or key systems with a special connecting arrangement. In most instances, interconnect suppliers treat intercom equipment as an integral part of a PEX or key system depending on their total system price.

Accessory or Peripheral Equipment

Small audio equipment or telephone accessories associated with telephone systems are provided by interconnect suppliers or by dealers or vendors that are not in the interconnect market. This device is not included in this report. These accessories include answering machines or call forwarding, typically as a feature of a business auto answering unit, the integration of the interconnect market. They also require interconnect outputs, even though many times with a single line or more telephone lines, and have their equipment connected directly to the telephone company line. If these accessories are supplied by the telephone company, however, it does not require a connection to the interconnect network. The most common devices are described below.

- Answering and recording machines represent the largest segment of the accessory market. They usually are not handled by fax and key system interconnect suppliers because they are sold predominantly to one- and two-phenomena where there are only manual dialing and two-phenomena. The devices are typically sold through direct mail, office products outlets, or department stores. The leading manufacturers are Ford Industries and Phonemart, Inc.
- Automatic dialers and call routers—dialers automatically place a preselected call upon the press of a button or the triggering of an alarm system. Interconnect suppliers generally do not handle this equipment. Major manufacturers are Nix Corp., Magically, Elgin Electronics, and Marcon. Name Caller.
- Paging equipment used for announcements or page calls over loudspeakers is only infrequently installed with fax systems. Many interconnect suppliers provide such equipment as part of their product lines. Leading manufacturers are Realind, Executive, Du Kane, and Blipon.
- Videophones, both slow-scan and wideband models, currently have obtained only negligible demand. However, this situation should change during the next five to ten years as more economical equipment and transmission facilities become available. The leading interconnect suppliers will be offering videophones as part of their product lines. In addition to Western Electric, the major manufacturers are RCA, Nippon Electric, and Stromberg-Carlson.
- Call for toll restriction equipment permits access to the toll network only by designated extension and specific area code, usually done by analyzing the first three to six digits dialed. Interconnect suppliers often include this option in their system offerings. The equipment is provided by major interconnect manufacturers and by the peripheral manufacturers Phonelec, E&M Communications, Teletronics, Telepath Industries, and Oso Electronics.
- Fax toll ticketing and management accounting equipment usually utilizes a microcomputer to analyze and print out toll bill data for all toll calls made by each extension, primarily for a counting and monitoring function. More complex model models provide other toll management functions, such as toll counting in terms of cost, private or not, or times. The equipment is sold very little in the field, but appears to be a major product line for some manufacturers. Some examples are American Communications, Norelco, and Vidar.

Interconnect Suppliers

Interconnect suppliers are essentially marketing and service organizations whose success depends on the effectiveness of their sales efforts and service capabilities. Their activities include analyzing customer requirements and recommending appropriate telephone systems. The recent dynamic growth of the interconnect market has resulted largely because most suppliers have succeeded in convincing end users that theirs is a better alternative to existing telephone company equipment.

Most small interconnect suppliers entered the business from the related fields of sound and communications equipment or electrical contracting. Almost all are local concerns that operate within a 50- to 100-mile radius of their headquarters.

The larger, nationwide suppliers, such as ITT's Communications Equipment and Systems Division, Norelco, and Stromberg-Carlson, were established primarily to provide a broader sales and distribution outlet for the parent company's manufacturing operations. Other major suppliers that did not have manufacturing affiliates when they entered the interconnect market found that this type of ver-

ESTIMATED SALES BY INTERCONNECT SUPPLIERS, 1973
(Millions of Dollars)

Liton Business Telephone Systems	25
Stromberg-Carlson Communications*	25
ITT—Communications Equipment and Systems Division (subsidiary of General Dynamics)	18
United Business Communications (subsidiary of United Telecommunications)	14
Universal Communications Systems (subsidiary of American Telephone & Telegraph)	9
RCA Service Company (subsidiary of RCA Communications)	8
Norelco Communications* (subsidiary of North American Philips)	5
GTE—Automatic Electric*	7
Teleco (subsidiary of Holiday Inns)	3
Tele-Resources	4
ITT—Terryphone†	4
Others (estimated monthly total)	60
Total	182

*Excludes sales to local suppliers. Figures for which are included under "Others." Includes sales by the former RCA Communications, plus national account sales. †Key system sales only.

Source: Sht.

tical integration is important for economic viability. The current leading suppliers are shown in the table on page 5.

Telephone Companies

American Telephone and Telegraph's 24 operating companies and most of the 1700 independent telephone firms are vigorously resisting interconnect suppliers' encroachment on their subscriber equipment business. The stakes are clearly enormous: the estimated equivalent retail sales value of the telephone companies' PBX and key systems in service (cumulative base) was \$15 billion in 1973.

At present, interconnect suppliers have penetrated about 3% of the cumulative PBX installed base. In terms of new and replacement installations, however, penetration has increased every year, reaching approximately 12% in 1973.

In 1973 about 9700 PBXs and key systems were installed in companies representing a wide cross section of business. Installations range in size from small key systems with six stations to 2000-line PBX systems. Interconnect PBX installations average about 75 telephones, or 70 working lines, and key systems average 12 phones. The average size of installation for non-Centrex PBX systems is similar for both telephone companies and interconnect suppliers, but for key systems telephone companies' installations are about half as large, or five to six phones. Roughly 80% of currently installed PBX systems have fewer than 100 lines.

The following types of users make up about 75% of the market for interconnect equipment:

Hôtels and motels	Stockbrokers
Manufacturers	Insurance agencies
Wholesalers and retailers	Attorneys
Automobiles	Service industries
Hospital and clinics	Banks

Hôtels are the largest category, with about 20% of installations, each of the others listed ac-

counts for 3% to 10%. The remaining 25% of users are in hundreds of business categories.

The controversial and unsettled environment in which interconnect companies operate is strongly influenced by the activities and decisions of regulatory agencies. These agencies include the FCC, state public utility commissions, and even local agencies (such as in Texas, where there is no state commission).

Interconnection on a selective basis has been allowed for many years for right-of-way companies (for example, railroads and utilities); its extension to other enterprises resulted from a series of judicial and FCC rulings. The most important was the 1968 Carterfone decision which disallowed telephone company regulations prohibiting the interconnection of customer owned equipment to the public telephone system, but allowed telephone companies to submit new tariffs to protect the system against harmful devices.

Revised tariffs filed by AT&T in January 1969 required that interfaces or connecting arrangements (cas) be installed for each outside trunk or subscriber line to insulate and protect the public network from the private segment. The devices, which currently must be furnished by the telephone company, are designed to:

- Prevent interference or degradation of service, or both, for noninterconnect users of the network

- Protect their maintenance personnel and telephone service users from possible dangerous voltages generated by private equipment

Most interconnect suppliers and manufacturers have acknowledged the need to protect the network but have opposed AT&T's approach. They contend that many telephone company installed couplers cause service problems instead of preventing them, and favor other, potentially less costly, methods. For the most part, many claim that the telephone com-

pany's requirement that it furnish CAS is a tactic to delay installations, increase costs to users, and generally make it more difficult for interconnect companies to compete.

CONNECTING ARRANGEMENTS

The basic principle of connecting is to prevent four possible paths to the public network, to be met in a National Academy of Sciences report as:

- Voltages dangerous to human life
- Signals of excessive amplitude or improper spectrum
- Improper line balance
- Improper control signals

The considerations are:

- Providing electrical isolation from public equipment and from line outputs to central office lines by means of an isolation transformer
- Limiting the maximum transmitted signals to an acceptable level
- Detecting and rejecting the false presence of hook supervision signals from the using equipment

The Bell System, on the other hand, rejects these claims and offers as evidence of proper intent:

- The design and development of over 70 types of CAS in five years, with specific ones designated for each type of system or peripheral equipment
- The in-service count of over 300,000 CAS for all types of voice services
- The publication and distribution to interconnect manufacturers and suppliers of technical references giving specifications and other detailed information on CAS
- Various commissions and committees have been established over the past three years to

help the regulatory agencies resolve these controversies. The complexity of these problems and the inherent slowness in solving them can be seen from the discussion of major regulatory issues in the box on page 10.

CURRENT STATUS

Sales by telephone interconnect suppliers, which were virtually nil five years ago when the industry as defined herein did not exist, reached approximately \$182 million in 1973. This figure represents:

3300 PBX systems with 248,000 telephones installed at a total sales value of \$130.2 million. Interconnect suppliers had 12.4% of all new and replacement PBX installations in 1973.

6000 key systems with 72,000 telephones installed at a total sales value of \$46.8 million. This reflects a 114% revenue increase over 1972. Interconnect suppliers accounted for 6.7% of all new and replacement key system installations in 1973.

• About \$5 million in service and maintenance revenues, which include charges for telephones added after the basic installation, as well as moves and other changes.

If sales by peripheral equipment companies were included, \$30 million could be added to the interconnect revenue total.

It should be noted that all of the above dollar estimates refer only to the end user or retail level of sales. They include the value of 1973 PBX, key system, and telephone equipment was about 50% of suppliers' revenues, or \$90 million. However, this amount does not include equipment that was shipped in 1973 but is still in inventory or being modified by suppliers for 1974 installations. Adding such output would bring wholesale sales to about \$120 million for the year.

In 1973, all manufacturers combined shipped an estimated 450,000 equipped lines of PBXs about 14% systems to the intercon-

PBX AND KEY SYSTEM INTERCONNECT SUPPLIER SALES
(Installations per Year)

	PDX Systems				Key Systems*			
	1970	1971	1972	1973	1970	1971	1972	1973
Number of Systems	505	1,059	1,400	1,400	500	500	500	500
Number of Transmitters (Transmitters)	34	114	125	248	100	336	720	720
Systems Sales Volume (\$'000,000)	20.5	14.5	14.5	14.5	7.0	22.8	40.0	40.0
Share of Total Equipment Replacement								
Annual Replacement* (Percent)	7.4	6.8	9.0	12.4	1.6	3.6	6.7	6.7

[illegible]

INSTALLED (CUMULATIVE) BASE OF PRX AND KEY SYSTEM TELEPHONES
(Thousands of Telephones in Service)

	PBX Systems ¹				Key Systems ²			
	1970	1971	1972	1973	1970	1971	1972	1973
Best System	14,860	14,185	14,670	15,120	7,200	7,500	7,850	8,100
Independent Telephone Companies	1,920	1,945	2,010	2,110	1,200	1,240	1,280	1,320
Other Telephone Companies	6	152	33	550		11	43	116
Other	3,330	10,789		17,850	6,000	8,760	9,074	9,670
Amount Reported Total (thousands)	4.4	2.7	3.7	3.4	4.0	3.9	4.4	4.4
Equivalent Total Sales Value ³ (Billions of Dollars)	\$ 1	\$ 86	\$ 93	\$ 94	\$ 1	\$ 4.7	\$ 5.9	\$ 6.1

* Includes Control, 15.5¢/kWh; 15¢/kWh for only 10¢/kWh; 16¢/kWh for average of 11¢/kWh; 16¢/kWh per system. IPLA system: Variable at \$0.20/kWh; 16¢/kWh system. Variable at 16¢/kWh.

Source: SRI.

nect market. Sales value at the wholesale level was about \$58 million, without telephones. Interconnect suppliers installed about 330,000 of these equipped lines, equivalent to about 231,660 working lines at 70 lines per system. Manufacturers' stand-alone key system interconnect shipment for 1973 were about 7500 systems, with 100,000 stations, each sold for roughly \$2.2 million. Sales of telephone station and other related equipment to the interconnect industry were another \$10 million.

To add perspective, telephone companies' revenues, including the residential market, were about \$47 billion in 1973 — or 150 times the sales figure for interconnect suppliers. Telephone companies' equivalent sales for new

and replacement PBX and key system installations were 77 times greater, or \$1.4 billion. The 1973 revenue loss for the telephone companies as a result of interconnect suppliers' installed base of 693,600 PBX and key phones was about \$70 million, or 0.25% of the \$28 billion total revenues.

The initial competitive activity in the interconnect industry was in *peer* rather than *key* systems. The original interconnect suppliers focused on the former because it offered larger unit prices per item and higher commissions per sale. Moreover, competitively priced and

equipped PBX systems were readily available from foreign and independent manufacturers.

This situation began to change in late 1971 and early 1972 when the Japanese-made Nitsuko-1030 key system was introduced in the U.S. This equipment was very favorably priced and had many desirable features. It was first successfully marketed domestically by the largest interconnect supplier at the time, Arcata Communications (since acquired by Stromberg-Carlson Communications). Interconnect key system sales provided an attractive alternative to PBX marketing for the following reasons:

The growing number of smaller local companies entering the interconnect industry could become established more rapidly with the easier-to-sell and simpler key systems.

Customers requiring fewer than 40 stations and fewer than 18 trunks were able to obtain equivalent (and in some cases even more) features than with a PBX system, usually at a lower net cost. An important part of the cost incentive is the fact that most telephone companies have a lower monthly rental charge for outside subscriber lines feeding into key systems than for the same lines (or trunks) connected to PBXs.

Interconnect salesmen could sell many key systems in the time required to sell one PBX system. This consideration compensated for the smaller commission on key systems.

Starting with 1972, more key systems were sold than PBX systems. This situation in turn stimulated several foreign and domestic manufacturers to increase their marketing activities and their developmental work on key system technology.

OUTLOOK

The long term outlook for the U.S. interconnect industry as a whole is quite favorable, in spite of current competition and regulatory restraint, and the fact that a temporary shake-out is occurring among marginal firms. The

industry has already gained considerable momentum and is expected to continue to increase its penetration of the total installed telephone equipment base.

Given the currently unresolved nature of the various issues impinging on the telephone interconnect industry, projections of market growth have been developed from both conservative and optimistic viewpoints. The timing of key regulatory, technological, and competitive events will provide significant indicators of which trend will apply.

The sales growth rates shown in the accompanying tables are relatively constant compared with those typical of emerging industries. The latter show a high initial rate that tapers as the industry matures. The approach used here builds upon three growth periods within the next 12 years that only coincidentally (and also for the sake of simplicity) blend into a constant rate of change in annual sales activity. The first period, probably of two to four years' duration, is expected to bring a temporary drop in growth from early high levels to the 10% to 20% a year range. This decline is likely as a result of ongoing shakeouts and consolidations, increased competitive activity by the telephone companies, and regulatory restraints. In the mid-range period (three to five years), growth would typically begin to taper off, but here it has been kept constant to reflect the expected resolution of major regulatory issues and stabilization of the industry.

In the last (three- to five-year) period, technological advances are expected to stimulate more frequent replacement of telephone systems. The first user life cycle of equipment will probably fall to five to ten years, compared with ten to 15 years at present. Hence, annual installation activity should step up (even for the telephone companies, which will be installing new or replacement systems for 12.5% of their vast equipment base instead of 10% a

However, the growth rate for the total (telephone company and interconnect) installed base for both the conservative and optimistic cases has been assumed to remain the same: an average of 4% annually (equal to the current total business phone growth rate).

Over the entire 12-year period, the conservative forecasts assume interconnect supplier dollar sales will rise an average of 13% annually for PBX systems and 16% for key systems; the optimistic forecasts project average annual growth rates of 18% and 21%.

respectively. Interconnect key systems should continue to sustain a higher percentage growth rate than PBXs because of the significantly larger total number of systems (representing potential customers) in the installed base (about 1.7 million key systems vs about 210,000 PBX and Centrex systems). However, about half of the key system base is in the small (two to six phones) size, which will not be profitable for interconnect penetration as long as connecting arrangement charges exist.

Total annual interconnect sales by suppliers

MAJOR REGULATORY ISSUES

Any company planning to participate in the interconnect industry must give particular consideration to the regulatory environment. The primary concern is that the

marketing of a product can be restricted by (a) directly diluting interest, (b) those of unresolved questions (1) government agencies, (2) local telephone companies, and (3) the courts. From the telephone companies' point of view, the key issue is: "Will the memory agency sponsor genuine competition, i.e., free entry into and exit from the market, or will they sponsor an artificial allocation of existing market?" The fundamental issues from the interconnectors' point of view are summarized in the table below.

ANTICIPATED RESOLUTION OF MAJOR REGULATORY ISSUES

are projected at \$559 million to \$726 million in 1980, and \$1.1 billion to \$1.7 billion in 1985. Average annual growth rates corresponding to these figures are 16% for the conservative

projections and 21% for the optimistic ones. Percentage increases in dollar volume are slightly higher than those for the number of systems, because of the expected increases in

PROJECTED INTERCONNECT SUPPLIER SALES
(Per Year)

	1973	Conservative				Optimistic			
		1975	1980	1985	Average Annual Growth Rate*	1975	1980	1985	Average Annual Growth Rate*
PBX Installations									
Number of Systems	3,300	4,350	6,800	10,980	10	4,630	9,310	18,700	15
Number of Telephones† (Thousands)	248	326	546	879	11	347	745	1,496	16
Sales Value** (Millions of Dollars)	130.2	179	308	571	13	191	447	972	18
Share of Total Activity (Percent)	12.4	15	21	24	—	16	27	37	—
Key System Installations									
Number of Systems	6,000	7,940	13,960	32,100	15	8,440	21,500	65,800	20
Number of Telephones† (Thousands)	72	98	144	385	15	164	298	657	20
Sales Value** (Millions of Dollars)	46.8	62	144	289	16	67	174	444	21
Share of Total Activity (Percent)	6.7	8.7	14	19	—	9.4	19	30	—
Service and Maintenance Revenues††									
(Millions of Dollars)	5	20	87	200	36	25.6	105	277	40
Total (Millions of Dollars)	182	261	539	1060	16	282	726	1493	21

*Computed annually over the 1973-1985 period. †At 75 PBX telephones per system, average. ‡At \$1,200 per telephone for an average system. §At 12 telephones per system, average. **At \$66 to \$70 per telephone for an average system. ††Average includes installation charges and other customer service orders (e.g., additions).

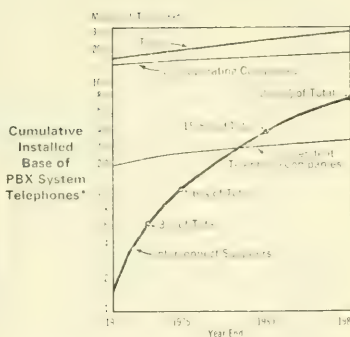
Source: SHI.

PROJECTED INSTALLED (CUMULATIVE) TELEPHONE BASE
(Millions of Telephones in Service)

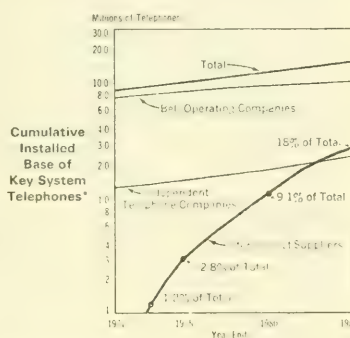
	1973	Conservative				Optimistic			
		1975	1980	1985	Average Annual Growth Rate*	1975	1980	1985	Average Annual Growth Rate*
PBX									
Bell System	15.12	15.72	17.30	19.27	2.0	15.70	16.88	17.99	1.0
Independent Telephone Companies	2.15	2.51	3.0	3.88	5.9	2.5	2.78	3.13	2.9
Interconnect Suppliers	8.8	1.18	1.4	2.3	22.0	1.21	4.03	8.00	25.0
Total	17.65	19.41	21.7	25.63	4.0	19.41	23.51	29.12	4.0
Interconnect Share of Base (Percent)	5	6.1	12	21.1	—	6.1	17.0	27.5	—
Key System									
Bell System	1.0	8.44	9.58	10.39	2.0	8.3	9.73	10	1.6
Independent Telephone Companies	1.8	1.84	1.8	1.9	1.1	1.3	1.3	1.4	4.0
Interconnect Suppliers	12	20	1.03	2.2	40.0	30	1.23	1.88	20.0
Total	14.8	13.08	12.46	14.6	4.0	19.9	12.3	13.3	21.6
Interconnect Share of Base (Percent)	1.0	2.8	8.8	14.6	—	2.0	9.9	13.3	—

*Computed annually over the 1973-1985 period. †At 75 PBX telephones per system, average. ‡At \$1,200 per telephone for an average system. §At 12 telephones per system, average. **At \$66 to \$70 per telephone for an average system. ††Average includes installation charges and other customer service orders (e.g., additions).

Source: SHI.



* Figures plotted midway between conservative and optimistic data in the tracks on page 11.
Source: SRI



* Figures plotted midway between conservative and optimistic data in the tracks on page 11.
Source: SRI

the average cost per phone and in the average number of phones per system.

Although service and maintenance revenues are currently small, they will represent the fastest growing portion of interconnect sales in the 1980s (at 36% to 40% a year). Such income is more directly related to the cumulative installed base of equipment than to annual shipments. In 1980, service and maintenance should account for about 15% of the sales dollar (compared with 3% in 1973), and in 1985 for 16% to 20%.

By 1985, interconnect penetration of the installed equipment base is projected to reach 21% to 30% for PBX phones and 15% to 21% for key systems. (The 1985 cumulative base interconnect figures are reduced to account for a replacement—changeout—of interconnect systems installed before 1975). These rates of growth would result in a 1985 interconnect installed base of 8.2 million to 11.7 million PBX and key system phones (out of a total of 43.2 million). It should be noted that the growth rates for the base figures decline slightly, even though sales activity is assumed to rise at a constant rate.

The cumulative value of interconnect equipment installed in 1985 is expected to be \$5 billion to \$7 billion out of a total of \$26 billion for all telephone equipment in service (valued at equivalent sales prices). Most of this penetration will come from replacement of existing installations in the denser Bell System territories, where the interconnect industry will continue to have its strongest market position.

Technology

Progress in telephone equipment technology should accelerate as fast as developments in the electronics and computer industries allow. By 1975, many of today's optional features will be standard. Increasing numbers of sophisticated auxiliary products will also emerge—for example, new handsets, terminals, remote answering machines, and autodialers for both the business and residential markets.

The accompanying box describes the evolution that has already occurred from a basic electromechanical approach to the more versatile and promising electronic systems. The important developments anticipated over the next ten years are:

The majority of new systems offered will utilize electronic common control by 1977. More than 90% will be all-electronic by the early 1980s.

There will be considerable application of time division multiplexing (TDM) for switching and pulse code modulation (PCM) techniques for voice signal distribution by 1978. These techniques will permit use of smaller cabling and will lower the cost of installation and maintenance by time sharing many circuits over one pair of wires.

Space requirements for all equipment will be smaller as a result of greater utilization of microminiature components.

Stored programming will replace most wired logic systems by 1980 and provide greater flexibility in feature selection.

By 1976, both technical advances and lower costs will allow more widespread use through the telephone system of data terminal and peripheral equipment for such purposes as telephone traffic analysis, toll accounting, call restriction, and remote computer entry (for computation, credit checking, sales orders, and inventory control).

There will be less of a demarcation between technologies for PBX and key systems, since solid state developments will permit provision of similar features for each by 1977.

IMPACT ON INTERCONNECT SUPPLIERS

COMPETITIVE ENVIRONMENT

In spite of, and partly because of, the interconnect industry's rapid and dynamic growth, many of the major nationwide suppliers have been undergoing a shakeout. The chaos and

(Continued on page 16)

PBX AND KEY SYSTEM TECHNOLOGY

The technology utilized in more than 95% of the approximately 2 million PBX and key systems installed in the U.S. is similar to that used 20 years ago. The equipment employs electromechanical relays, crossbars, or stepping switches in paths for the control and switching of the transmission paths between telephones. Electronic, solid state technology has only recently begun to be utilized for subscriber equipment in the U.S. However, user application is expected to accelerate during the next ten years, spurred by the emerging interconnect industry and continuing cross fertilization of designs with overseas producers.

DEVELOPMENTS IN PBX TECHNOLOGY

PBX equipment has evolved along the general lines of central office exchanges, but with differences that reflect the smaller number of telephones served and the types of features required. Switching systems are generally classified by the control techniques—manual, direct, or common—and the type of component technology used. In manual control, the operators make the connections using cord circuits and jackfields. In direct control, the appropriate circuits are tied together progressively as each digit is dialed, and remain occupied until the conversation is complete. In common control, the dial pulse data are stored, analyzed, and forwarded in the format of a routing code to activate the switches required to establish the desired circuit connections. Unlike direct control, common control equipment is tied up only during the time a connection is made and not during the conversation.

The switching classification of space division or time division describes the signal path technique used. Space division multiplexing (SDM) uses separate metallic physical paths (or distance), while the time division multiplexing (TDM) techniques utilize microsecond time separation of signals over a common path. In the latter, each transmission channel is assigned its own intermittently repeated time space, and the signal is reconstructed at the receiving end. Although frequency division multiplexing (FDM) employing frequency separation is also theoretically possible, it is not normally used in telephone switching.

Step-by-Step Switching

Step-by-step (SxS) switching, invented by Almon Strowger in 1893, is still the most widely used switching equipment in the world. It is essentially a direct control, two motion, stepping switch. The movements are controlled by electromagnetic ratchet mechanisms activated by dial pulses. A three dimensional space division switch selects a layer of contacts by moving up and down, and then chooses a contact within that layer by horizontal rotation. The switches are connected in series to form a switch train consisting of a linefinder, selectors, and a connector.

As the calling telephone is taken off-hook, the linefinder "seeks and connects" to the calling line. Each linefinder then connects with the next stage selector, which provides dial tone to the caller. As the dial pulses (which designate the destination) arrive, they step the selector switches to connect the appropriate common paths. The last selector output attaches or connects the calling line to a "connector" switching stage associated with the called telephone switching equipment. The last digit dialed completes the circuit connection to the called telephone. The final connector switch also makes a final test and either returns a busy signal or rings the called telephone. All of the switch stages remain in use until the calling party hangs up, at which time they release and become available.

(Continued)

KEY AND KEY SYSTEM TECHNOLOGY (Cont.)

The advantages of SxS are:

- Low initial cost
- Completely modular format with almost unlimited expandability
- Simple design concept requiring less experienced maintenance personnel than other techniques

The disadvantages are:

- Limited feature options
- High labor and maintenance costs
- No economies of scale achievable
- High noise, thus making SxS unsuitable for data communications
- Large floor space requirement

Crossbar Switching

Crossbar systems are generally common control systems that use an electromechanical crossbar switch in a space divided network. The crossbar switch consists of a horizontal and vertical arrangement of conductors that can be connected to form a signal path. The switching principle was designed in 1912 by Betulander and Palmgren, Swedish telephone engineers, and was first installed in an exchange in 1919. It was not until the 1930s that AT&T developed crossbar systems utilizing common control; these systems were designed to overcome the deficiencies of direct controlled SxS equipment with respect to:

- Time required to make connections
- The necessity for tying up all switching equipment associated with placing and ending a call
- Inability to go back to an earlier switching stage to look for other connecting paths in case of a busy condition

The major distinguishing feature of the crossbar is that it utilizes an entirely separate common control to activate the switching for many lines. This feature permits more efficient utilization of equipment because many calling connections can be completed during the time of an average conversation.

In activating the switches to complete the desired circuit connections, the common control operates much like a small processor or controller of a computer system. The following steps typically occur in placing a call:

- Caller takes telephone off-hook, signaling a marker (control) that service is required.
- The marker makes a connection between the caller and an available register which in turn delivers a dial tone, stores the incoming digits, and passes the call destination location back to the marker. While data are being received by a register, the marker processes other calls.
- The marker then activates the switches to set up the connection. If the called phone is not busy, the marker applies ringing current and releases itself from the line to service other callers.

The advantages of crossbar over SxS switching are:

- Availability of more features via common control
- More compact size because the switching matrix is smaller than in equivalent SxS equipment
- Lower maintenance and labor costs
- Wide choice from many current offerings
- The disadvantages are:
- Relatively limited modular expansion because of the fixed matrix structure and also because of specific capacity limitations
- High cost of expanding beyond the capacity of the original installation

Several variations of the SxS crossbar switching equipment have been produced in the U.S. and Europe, such as the Pan/Dial and SxS Products Inc. Motor Driven Selector. An evolutionary development that bridged the gap between conventional electromechanical crossbar and fully electronic switching was the utilization of reed relays for the "crosspoints" or connection points in the matrix. Instead of the typical relay connection, contact is made through a reed relay coil, usually in a tube filled with inert gas. These reed relays operate more rapidly, in less than a microsecond, require less power, and are easier to control than the earlier electromechanical switches. Furthermore, the current levels needed to operate them are more compatible with the solid state semiconductor and diode transistors from common control PAXs.

Electronic Switching

Developmental work on electronic switching was initiated by Bell Labs in 1951, but it was not until 1965 that the first commercial control office system was put into service in New Jersey, for 7100 subscriber lines. In the past five years, cost-effective technical advances in solid state components and computers have allowed this technology to be adapted to PAX system designs. Today, the telecommunications industry has thousands of electronic control models and 20 models of PAX systems are now being offered with electronic common control.

The earlier electronic systems utilized SDM techniques, but about half of the newer equipment under development employs TDM methods. Most of the electronically controlled SDM systems operate similarly to the common control crossbar, but are quicker and more compact. They can use a conventional crossbar matrix, the semi-electronic reed relay, or the fully electronic solid state matrix switches using pnpn or scm components.

Electronic systems contain both memory and logic capabilities. The control logic is implemented in three ways:

- **Wired logic.** As in the electromechanical approach, control actions are predetermined by the wiring connections. There are some limitations on feature flexibility and modification capability.
- **Programmable logic.** The sequence of events can be varied somewhat by revised strapping and rethreading of wires.
- **Stored programs.** All logic is stored either by means of an exchangeable memory or by programming (software). A function or control sequence can be changed by amending the program.

With present technology, stored program control is not economical for PAX systems with fewer than 200 lines. Above this size, PAXs can be programmed to provide not only the common control function, but also self-diagnostic routines, toll recording, and traffic monitoring. Additional memory makes more features available, such as abbreviated dialing, call forwarding, automatic transfer, and call back.

Electronic switching, particularly the TDM type, appears to have considerable promise because it:

- Is more cost effective for advanced features. Although a basic electronic system with minimal features is more expensive, the cost of advanced features, particularly those such as toll recording, is not elevated as much as in the SxS type.
- Provides more reliability, equipment and thus requires less maintenance.
- Offers more protection against fires and is usually not

confusion could last for several more years. The reasons for this situation, which are interrelated in terms of cause and effect, are:

Lack of experienced managers who can cost-effectively tie together the appropriate skills required to operate nonregulated companies in a regulated environment.

Higher than expected startup investments and sizable negative cash flows, largely due to ineffective controls and high installation and maintenance costs.

Geographical overexpansion and the resultant dilution of management control over newly created branches that lack trained and skilled personnel who are capable of providing cost-effective support.

• Direct competition, from both new suppliers and the telephone companies, which has been increasing in concert with overall market growth.

• Indirect competition as a result of lowering of certain equipment tariffs in many of the Bell System operating territories. The telephone companies' monthly \$5 to \$10 per trunk price for interface coupling devices further limits the competitive margin for profits.

• Difficulty and expense of providing adequate and timely nationwide service and maintenance.

• Inability of even the larger companies to support substantial legal expenses and the management time required to challenge the telephone companies' pricing practices in many operating territories.

• The impact of dollar devaluation on the cost of imported equipment, cutting into profit margins of both supplier and manufacturers. These extra costs are difficult to pass on to customers in the current intensely competitive environment.

In the face of such problems, there has been considerable consolidation among companies needing each others' money, manufacturing, or

marketing and service strengths. Examples are Stromberg-Carlson's acquisition of Arcata Communications and Gulf-South Financial's acquisition of Gulf-States Telephone Company. In addition, a number of sizable firms, such as Litton, ITT, Philips, and Lear Siegler, are entering or expanding into the marketplace. These large competitors and the small suppliers that are able to survive the critical start-up years should be able to reap the benefits of a growing market. The rcc is likely to continue to favor a combination of competition and regulation over what had been a regulated monopoly. The advantages that the surviving suppliers will have are:

Greater flexibility than the telephone companies in obtaining new products from a wider selection of manufacturers. (The telephone companies' product offerings usually are standardized for a larger customer base.)

• No direct regulatory control over operations, allowing flexibility in negotiating sale discounts.

• Ability in most instances to respond to customized requirements more readily than the telephone companies and to offer a greater variety of feature and purchase options.

• Growing acceptance of interconnection in the general business community and recognized industry groups such as the International Communications Association, the Computer and Business Equipment Manufacturers Association, and the Electronic Industries Association.

• Ability to concentrate on selected markets and customers rather than providing service to every potential user as the telephone companies are required to do.

• Greater flexibility in recruiting and rewarding personnel. Compensation can be directly related to sales, whereas telephone company employees earn a straight salary.

• The opportunity to take advantage of customers' expanding service and maintenance requirements. (This will be a growing business

not only for interconnect suppliers but also for other companies that can offer such service on a contract basis.

As interconnection spreads to the smaller cities that are more effectively served by a small local company, and as shakeouts take place among the major firms, the market share of the latter suppliers—two-thirds in 1973—is expected to decline to about 50% by 1975. Thereafter, reconsolidation as the large companies buy out smaller ones will push the major suppliers' share back up to the two-thirds level by 1980.

Interconnect suppliers now serve only individual business users, but will begin to penetrate entire office complexes, shopping centers, and apartment buildings. During the architectural planning and construction phases, building owners can contract for a total telephone communications system to serve essentially all tenants or residents. Utilization of the new "Scope Method" of construction (which expedites cost estimating in early stages) will allow more economical installation of telephone systems during the initial building phase. Several of the major interconnect companies are actively investigating this market.

A major obstacle to market development will occur where the building owner or manager "resells" services to the residents. The problem stems, of course, from the current requirement that those providing "resale of services for hire" obtain certificated status. If this regulation is relaxed or if the building owner or manager is allowed (and willing) to provide the service without profit, then substantial markets could develop.

A related trend that will also favor interconnect industry growth is the continued movement of corporate and even government headquarters to new locations. The firms affected are then forced to reexamine their communications requirements, thus increasing the potential demand. Nevertheless, such

opportunities will account for only a small portion of interconnect sales; the majority of users will continue to be among companies that decide or are convinced to replace their existing systems because of cost savings, new features, desire for equipment ownership, or dissatisfaction with present telephone company service.

As the interconnect industry becomes more mature, sales to the government, which have been rare in the past, are expected to increase. The tendency among government agencies to operate for long periods in one location should allow them to realize cost savings from ownership or long term leases.

IMPACT ON MANUFACTURERS OF INTERCONNECT EQUIPMENT

Equipment manufacturers' potential market is much larger than that represented by interconnect suppliers alone; they can also sell their products to telephone companies. All of the major manufacturers have started with a base of sales to telephone companies. As a result, their viability is not vitally affected by the current fluctuations among interconnect suppliers. The impacts of interconnection have been mostly favorable for manufacturers in the following ways:

New avenues of distribution have been opened up through the operations of some 250 unaffiliated interconnect suppliers.

Many telephone companies have begun to purchase equipment outside their usual channels, primarily to remain competitive.

The apparent success of the new features, systems, and technology introduced has opened the marketplace to a wider range of products. Many of the advanced products are being sold at higher unit prices than traditional equipment, thus enlarging sales volume.

The broader product lines will add to manufacturers' risks, but there will be an offsetting compensation from the concurrent trend to

Continued on page 21

With the exception of Canada, the major countries covered in this section have had privately interconnected systems for more than 50 years. There are two main reasons for this: First, the telephone companies, typically state owned or controlled, did not have and could not directly raise the investment capital required for expansion. Second, hardly any of these telephone companies manufactures its own equipment; instead, each buys from local manufacturers, who bid competitively on product specifications. The few foreign telephone organizations that have some manufacturing capabilities are Bell of Canada (which owns Northern Electric), the Swedish Telephone Administration, and the Italian Società Finanziaria Telefonica.

The procedures for interconnection in these countries are basically similar. Generally, equipment manufacturers submit prototype products for testing to the typically government owned telephone company. Technical modifications may be negotiated to make devices acceptable to both parties, and finally the equipment is certified. The approved equipment is then hard-wired by direct electrical connection to the public switched network. Although the process appears to be relatively simple, certification can take from six months to several years. Furthermore, specifications and approvals in one country do not carry over to any other, so that multinational firms must offer slightly different systems in each of the countries in which they operate. An exception is IBM's provisionally approved 2750/3750 PBXs that are essentially the same in Germany, the U.K., and France.

Users generally have the option of acquiring equipment from the government owned telephone company or directly from government approved manufacturer-suppliers. Most interconnect users lease their equipment, but some purchase their systems outright.

In recent years some government controlled telephone companies have sought to loosen their close ties to domestic suppliers. These moves have not, as yet, altered the dominant position of the local companies. Thus potential foreign entrants will have difficulty penetrating markets unless they affiliate with a local firm.

EXCHANGE RATES USED IN THIS REPORT

Country	Monetary Unit	Units per Dollar
France	Franc	4.2
Germany	Mark	2.55
Italy	Lira	570
Japan	Yen	265
Swedish Krona	Krona	0.41

Source: United States Federal Reserve, November 1, 1972.

JAPAN

The Japanese telephone industry is largely controlled by a government agency, Nippon Telegraph and Telephone Public Corporation, Nippon Tetsu-telephon Kaisha, Ltd. (NTT). The company provides standard telephone service throughout the country. The expansion of the country's telephone network is slow, but steady, and is based on a policy of "Narrowband" service, which is a low speed, low capacity service. This service is used for most of the country's telephone service. The company also provides a "Wideband" service, which is a high speed, high capacity service. This service is used for most of the country's long distance service.

acoustical devices and, since late 1972, to install and use data transmission equipment.

In 1972, the NTT had 35,000 systems with 1.1 million phones in service; the 56,000 interconnect systems had 2.8 million phones. The percentage of installed PBXs in Japan that are user owned and maintained has risen from 50% in 1965 to 61% in 1972. The share for NTT owned and maintained PBXs has dropped from 50% to 38% in the same period; the remaining 1% in 1972 was user owned and NTT maintained.

PBX AND KEY SALES IN JAPAN

PBX and Operator Consoles	1970	1972	1975	1980	1985
Number of Lines (Thousands)	417	561	746	952	1103
Sales Value (Millions of Dollars)	71	95	127	162	188
Key Systems					
Number of Phones (Thousands)	519	846	1461	2938	4730
Sales Value (Millions of Dollars)	41	73	127	255	410

Source: Pacific Projects Ltd.

The Communications Industries Association of Japan (CIAJ) has estimated 1972 PBX sales activity at 561,000 phones with a sales value of \$95 million. The manufacturers (who are also the suppliers) of PBX equipment are approved by NTT after an inspection of their products. The approved companies and their market shares have changed very little in recent years. The leading companies are:

PBX Manufacturer/Supplier	Percent of Market 1972
Nippon Electric Co. (NEC)	30
Hitachi Ltd.	20
Ori Electric Co. Ltd.	20
Fujitsu Ltd.	20
Iwatsu Electric Co. Ltd.	5
Meisei Electric Co.	2
Nakagaki Tsushimiki Co. Ltd.	2
Takao Electric Co. Ltd.	1
Total	100

Source: Pacific Projects Ltd.

About 80% of the PBXs installed are the crossbar type. The trend is toward installation of more electronic type equipment.

Key system sales are handled in the same way as PBXs. NTT concentrates its orders on companies that are not already suppliers of PBX equipment, thus encouraging newcomers to enter the field with innovative products. The CIAJ estimate for 1972 key system sales was 846,000 phones or \$73 million. Leading companies are:

Key System Manufacturer/Supplier	Percent of Market 1972
Iwatsu Electric Co.	30
Hitachi Ltd./Hitachi Business Electronics	25
Fujitsu Ltd.	20
NEC	10
Meisei	6
Nakagaki	4
Hitachi Ltd./Hitachi Electronics	10
Total	100

Source: Pacific Projects Ltd.

OUTSIDE THE U.S.

Recently, key systems sales have been growing at a faster rate than PABX sales, and this trend is expected to continue. Annual growth for key systems should average about 12.5%, compared with 4% for PABXs.

Exports of telephones and telephone-related equipment to the U.S. rose from \$3.1 million in 1967 to \$67.4 million in 1972. Total world exports for this category rose from \$14.6 million in 1965 to \$103.6 million in 1971. For the U.S. Standard Industrial Classification, sic Code 3661 (telephones and telegraph apparatus), Japanese exports to the U.S. for 1972 were \$7.1 million, of which the PABX portion was \$49 million representing about 200,000 lines.

The value of imports (mostly for data transmission equipment) has remained small but steady: \$5.5 million in 1968 and \$7 million in 1972. For sic Code 3661, Japanese imports from the U.S. were \$2.3 million.

CANADA

Except for peripheral equipment (mostly answering devices and alarm systems which require cabling), there was no formal interconnection program for PABX and key systems in Canada as of the end of 1973. However, the Canadian Federal Department of Communications has been working for several years to develop a program jointly with common carriers, manufacturers, suppliers, and users.

There has been a growing pressure, primarily from industry groups (particularly those with U.S. ties), to liberalize interconnection policies. The major factor causing delay is that the Canadian government has only limited influence over the 1600 independent telecommunications companies. Bell of Canada, with 60% of the telephones, is the only major telephone company federally regulated; the other companies are provincially regulated.

The telephone companies and the federal and provincial governments are taking differing positions on interconnection. Until these differences are resolved, it is not clear whether interconnection will be permitted, and if it is, to what degree and under what regulatory authority. One possibility, if agreement is not forthcoming, is that new legislation could be issued by government entities, if they can decide what is needed.

Bell of Canada's official position is "... that competition is better for the consumer than regulation, and that it makes sense to introduce it when practical." However, the company has stated that the initiation of competition must be accompanied by the removal of regulation from those services that are now or would become competitive. Furthermore, Bell believes that such changes must be accomplished without incurring costs to the users of services that would continue to be regulated.

Some Canadian observers propose that particular classes of equipment could be deregulated. This step would open Bell to competition in selected geographic areas and particular categories of users, from any supplier approved or reliable. Suppliers would be licensed and equipment would be type approved by a nongovernment established group, a not identified. Other possibilities might include: purchase of equipment from Bell must be restricted by the federal and provincial governments; or Bell must be required to sell its equipment to other suppliers at a price no less than the price it charges to its own customers.

The number of units in service in Canada in 1972 was about 1.1 million PABX telephones and less than 1.0 million stand-alone key system phones. Estimated new and replacement installations in that year amounted to 8% of the installed base for PABX systems and to 9% for key systems.

UNITED KINGDOM

Although the U.K. has allowed the interconnection of private PABXs (over 100 lines capacity) for many years, its control policy has been very tight. Until 1968, a few companies, namely GEC, Plessey, and RTV/SRC, enjoyed a monopoly of PABX orders. Systems with fewer than 100 lines have been manufactured by the three companies, but supplied by the British Post Office (BPO). Larger PABXs for nongovernmental use had to be purchased directly from one of the companies. (The BPO's policy not to supply larger PABXs resulted more from shortages of capital than from a liberal attitude toward interconnection.) Furthermore, there was a limited range of models, all manufactured and type-tested to rigid Post Office specifications. The restrictive procedures have tended to discourage manufacturers from showing initiative with new designs and have prevented users from benefiting from new systems and features. All maintenance has been carried out by the BPO.

Since 1968, the Post Office has very slowly begun to relax its restrictions on PABX equipment and has accepted selected models of L. M. Ericsson equipment. During the next four years, it granted provisional acceptance to certain models made by Pvc/Philips, Thorn/CRC RT/IBM (of Belgium), and IBM. Most of these models are still under review for "type-approval." In this typically slow process, the manufacturers must guarantee continuity of production and availability of spare parts to gain approval. (The latter requirement means that any foreign concern wishing to serve the British interconnect market will need to establish a British-based office.) Manufacturers also must demonstrate that their equipment offers significant advantages over others in the same size range. The BPO is unlikely to consider accepting any more crossbar designs, but has expressed a willingness to review electronic models that will meet its criteria.

The British private PABX market is currently growing about 12% a year. Sales in 1972 were about \$40 million. The market shares were approximately as follows:

Manufacturer/Supplier	Percent of Market 1972
Ericsson & Co. (Sweden/R. Italy)	50
General Electric (U.S.) (GEC)	30
RTV/SRC (Belgium)	15
L. M. Ericsson	10
IBM	5
Others	1

Source: BPO.

In addition, PABX sales to the Post Office in 1972 were about \$20 million. Sales to the BPO were in the \$100 million range, and their market in large telecommunication

INTERCONNECT PRACTICES OUTSIDE THE U.S. (Cont.)

lations in government departments. The distribution of sales for the latter equipment was about 10% GEC, 40% Plessey, and 20% STC. Of the under-100-line units in service in the U.K. in 1972—about 20,000—approximately 5600 were installed in that year. The above figures do not include RMXS, of which there are more than 25,000 systems, mostly supplied by Plessey.

The key system market is still fully controlled by the IPO. There are about 10,000 stand-alone key systems with 16,000 stations. The Post Office installed about 26,000 key stations behind RMXS in 1973. The peripheral attachments market began to open up in 1972 when the government decided to allow private sales of answering devices, paging equipment, and intercoms.

Prospects for the interconnect market in the U.K. will depend more on the behavior of the Post Office than on technological and economic breakthroughs. This will be especially true where the full utilization of new proposed equipment requires a more modern central office network than the currently predominant step-by-step equipment. Most local investments in research and development have been closely linked to BPO procurement policy and specifications.

FRANCE

The French Ministry of Post and Telecommunications (PTT) permits attachment of private equipment that has been type-tested and approved prior to connection. Approval is slow and formal and is not readily granted to foreign equipment. The specifications and standards are currently most rigid for telephone sets: users are essentially allowed to purchase only one model, which all suppliers must make to identical specifications. Since the PTT provides the transmission paths but few services, the predominant portion (about 95%) of the terminal market is privately supplied, but generally by French-owned companies.

Maintenance is the responsibility of subscribers, who can select from approximately 400 companies authorized to install and maintain telephone equipment. The major manufacturers, which sell both directly and through independent suppliers, also have their own distribution organizations for sales, installation, and maintenance.

The PTT has recently warned against the entry of private telephone exchange equipment that it will soon place the market under surveillance. The Ministry is setting up a consulting company that will advise buyers of electronic exchange equipment on which systems are most appropriate to the service needed. This is a first step toward regulation on the private exchange market in Europe.

The French interconnect market of \$170 million is divided up approximately as shown:

Manufacturer/Supplier	Percent of Market 1972
France	85
Italy	10
Germany	3
Other	2

FEDERAL REPUBLIC OF GERMANY

Interconnection is widespread in Germany: more than 48% of all the RMXS systems in service are privately owned. Even more significant is the fact that a majority of larger systems is privately owned. In terms of dollars or number of stations, interconnect accounts for more than 75% of the approximately 5 million RMXS phones in service.

Overall standards are developed and approved by the Fernmeldebehörde des Zentralamt (FZ) as division of the Deutsche Bundespost, which also type-tests and certifies equipment. The testing (at manufacturer's or user's expense) can be conducted on a submitted sample or, for larger PABXS, at the user's premises while the equipment is connected to the network and in provisional use.

The Bundespost has set up detailed rules and regulations on the operation of the public switched network, the attachments, the maintenance, and the division of control and responsibility between users and itself. Installation and maintenance organizations are also licensed by the Bundespost.

The leading companies (which also sell to the Bundespost) and their respective shares of an estimated \$160 million interconnect market are:

Manufacturer/Supplier	Percent of Market 1972
Siemens	35
Telefonbau und Normalmont.	23
HTS Standard Electric GmbH	20
Deutsche Telefonwerke	10
Other	12
Total	100

Source: STET

ITALY

Interconnection practices in Italy are similar to those in France and Germany, except that the majority of users (about 75%) lease from the domestic carrier, SIP Societa per l'Esplorazione Telefonica. SIP is run by the state-controlled holding company, SIFET (Societa Finanziaria Telefonica). Approval and certification are provided by the Superior Institute of Post and Telecommunications and are claimed to be granted solely on the basis of technical quality, regardless of the national origin of equipment. Although the claim is not always strictly followed, solicits foreign bids on equipment, both the telephone company and interconnect equipment markets are dominated by five major domestic manufacturers. Their shares of the estimated \$17 million Italian interconnect market were:

Manufacturer/Supplier	Percent of Market 1972
STET	35
STET	23
STET	20
STET	10
STET	12
Total	100

Source: STET

shorter replacement cycles. With continued rapid development in technology and innovation, the first user lifetime of equipment could approach the computer cycle of five years in the 1980s.

Non-U.S. manufacturers (especially the Japanese companies Nippon Electric, OKI of Japan, Northern Electric, and Nitsuko) will continue to have the dominant share of the U.S. interconnect market until the late 1970s. By then, the trend among U.S. manufacturers toward solid state electronic systems and more automated production should help them to counter overseas competition, which is more labor dependent. Before 1980 the U.S. companies should begin to take over the major share of the domestic market. (This would include the U.S. portion of domestically controlled firms with foreign minority ownership, such as OKI Electronics of America.)

Recent dollar devaluations have given U.S. companies some price advantages over Japanese and European manufacturers. These price advantages, combined with continuing advances in American technology and increased liberalization of import restrictions abroad, could lead to U.S. products being shipped overseas.

The number of U.S. PBX and key system manufacturers should increase from about 20 at present to about 30 by 1980, with at least one computer firm being among the leaders. The major companies, which are concerned about the smaller, lower cost producers, may support high certification fees and complex standards and procedures to keep the cost of market entry high.

Several manufacturers (for example, ITT and Stromberg-Carlson) have attempted to increase their penetration and provide wider distribution by integrating vertically into the supplier function. Concurrently, some suppliers, e.g., Executone and Tele/Resources, have acquired manufacturing capability. Generally the manufacturing arm operates separately, so that it can serve other suppliers and the telephone companies.

IMPACT ON ASSOCIATED INDUSTRIES

The peripheral telephone equipment industry and the specialized common carriers are the two major industries that are most often associated with the telephone interconnect field. Both have been significantly affected by activities and developments in interconnection. In addition, computer and component manufacturers are beginning to become involved.

Peripheral equipment companies sell to telephone companies, end users, and also to the new broad base of interconnect suppliers. Interconnect firms' installations of one type of auxiliary equipment, the videophone, are expected to reach 20% to 30% of total installation activity in the 1980 to 1985 period. In addition to the animated Picturephone® type, a selectable slower scan mode will be offered in which animation is sacrificed for high resolution capability. The latter type of device will be used for transmitting textual or graphic material.

One possible trend is that many peripheral equipment manufacturers will merge with suppliers and manufacturers of PBX and key systems as more peripheral hardware is utilized in the basic systems. In fact, the current demarcations among all three will be less discernible.

The publicity on interconnect activity has benefited peripheral equipment producers by making more users aware of their existence. Such companies are on the same side as interconnect suppliers in the continuing controversy on the need for protective couplers between the telephone network and their equipment. The FCC, in attempting to separate resolution of the peripheral products issues from the PBX controversy, has set up an advisory committee—the Dialer and Answering Device Group—in addition to the PBX Advisory

Group. Because of the history of lengthy delays and differences of opinion among representatives to such groups, no major action is expected until after 1975. However, the issues of most concern to the peripheral group are likely to be resolved before those affecting PBX and key system suppliers because the problems of the former are less complex.

The specialized common carriers (SCCs) that compete with telephone companies in the sale of private network transmission services can be more readily distinguished from the basic telephone interconnect industry. However, some complications in definition arise. Although private transmission systems do not connect directly with the public switched network, the PBX or key system terminals are tied into both the public network and the private lines. Such terminals can be provided by a telephone company or by an interconnect supplier. To cloud the distinction further, most SCC private long line installations utilize or interconnect into telephone company provided local loops (trunk lines) and terminate into PBXs on the customer's premises.

Several SCCs have indicated a desire to provide complete end-to-end user services, including PBX and key systems. They may do this via joint efforts with interconnect suppliers or by building or acquiring an interconnect company.

Convergence of Technologies

The inevitable convergence of the computer and communications technologies suggests that computer manufacturers will be drawn into the interconnect market, although none has officially entered into U.S. competition yet. New developments in computer technology that allow lower costs and additional features in electronic switching indicate a trend toward greater automation of PBX and key systems. The control logic and memory portions of PBX

switches are particularly favorable targets. In fact, some of the newer electronic PBX systems utilize general purpose minicomputers for these functions. As a result, several computer manufacturers are investigating possibilities of supplying minicomputer PBX subsystems or actually building entire PBXs.

IBM has entered this market in Europe. Its 2750 and 3750 PBX systems were designed and developed in LaGaude, France, and are being manufactured in Montpellier, France. A considerable number of these systems had been installed in Europe by the end of 1973. (Estimates range from 50 to 100.) In addition to the typical advanced voice features available on most electronic PBXs, IBM's equipment allows data to be sent directly from 'Touchtone' telephones to separate computers connected to the system. Current data applications include spare parts control, production control, shipment records, and customer file inquiries and updating. Some computer firms also sell a separate communications front-end data preprocessor which is added to the PBX to accomplish the data functions.

An obvious favorable result for computer manufacturers will be the increasing utilization of data processing and terminal equipment. Use of the telephone to accomplish many of the functions performed by the more typical terminals will also expand the EDP market.

Cost is the most significant factor limiting rapid growth of the voice/data PBX systems, which are about three times as expensive as a voice only system. Thus, potential users have to be able to make extensive use of the data handling and collection capabilities to justify the added expense.

As the costs of basic medium and large scale integration for electronic circuits continue to fall, electronic stored program controlled telephone switching systems will become more cost-effective than electromechanical telephone systems. Computer manufacturers' skills in these areas should encourage greater involvement in building PBX and key systems.

Before the emergence of the interconnect industry, most of the components going into the fabrication of AT&T and GTE telephone systems were produced in these companies' own manufacturing operations. As formerly captive supply channels have opened up, however, the other manufacturers increased their buying from noncaptive component firms. Purchases include not only medium and large scale integration elements, but also relays, recds, and other subassembly components. Several dozen component manufacturers are benefiting from the increased diversity of telephone manufacturing operations.

A major factor still limiting substantial growth for U.S. concerns in this area is the large volume of Japanese and other foreign products coming into the U.S. However, if the emphasis in interconnect manufacture shifts from foreign to domestic products, as expected by 1980, there should be a proportionate increase in business opportunities for U.S. component manufacturers. In fact, the current advanced state of the art in U.S. integrated circuit and other component firms should expedite this trend. Increasing labor costs, proportionately more significant outside the U.S., should accelerate the shift.

IMPACT ON TELEPHONE COMPANIES

The establishment of the interconnect industry has had and will continue to have a substantial impact on the telephone companies, primarily in the following areas:

- 1. New product development
- 2. Marketing strategies
- 3. New tariffs (pricing)
- 4. Capital investment

New Products Developed

A combination of three factors—the Carterfone decision, technological advances, and stepped-up market demand—has caused the

telephone companies to become quicker and more responsive in introducing new PBX and key system products. In early 1970, AT&T established a new facility in Denver, Colorado, with a widely diversified task force to expedite the development and manufacture of a more competitive product line. Under one roof, AT&T assembled Western Electric and Bell Labs personnel working alongside AT&T engineering, marketing, and traffic specialists. In the past 18 months, four new competitively priced PBXs have been introduced:

805A—up to 57 station lines, 12 trunks, series 100 features (plus several options), crossbar switch network, and electronic common control.

801A—40 to 270 station lines, 56 trunks, full series 100, 200, and 300 features with a modular ferreed switch network. An expanded version of an earlier 800A system, the 801A uses existing 800A design technology and circuitry.

770A—40 to 400 lines primarily for hotel/motel use and also some series 100-300 use. The system is electromechanical with a crossbar switch network and wire spring relay common control. The tariff is less than that for any comparable Bell System offering and thus is more competitive with interconnect offerings.

812A—300 to 2000 lines with Centrex service features, using a crossbar switch with electronic common control. Offered late in 1973, the system is expected to have only limited availability until the end of 1974.

In spite of this strong response from the Bell System, the technology and diversity of user requirements are changing so rapidly that the three-year lead time the company once needed for new products is no longer available. This problem could be alleviated if AT&T and especially the independent telephone companies purchased some of the products developed by other manufacturers. Such a trend appears to be developing: General Telephone and two Bell operating companies (Pacific Telephone and Southern New England Telephone Company) purchase PBXs from Nippon Electric and Northern Electric of Canada.

Probably the most impressive response of the telephone companies, especially AT&T, is a nontraditional aggressiveness and vitality in marketing approaches and strategies. They have reorganized their marketing departments, in many cases increasing the staff and setting up teams to compete with interconnect suppliers in major markets. They have also adopted better tools, including computers to prepare cost-effective financial comparisons. AT&T is advertising to the business market and is attempting to educate users to the advantages of staying with the telephone company. As soon as Bell learns that a customer is considering installing an interconnect system, it usually approaches him with a competitive offering.

Many Bell companies have set up coordinators in major markets to stay abreast of competition and to assist their communications consultants in preparing proposals and in finding the limitations in interconnect offerings. Bell is also directing efforts to upgrade its general image and its response to service and maintenance problems. Advertising and promotion stress AT&T's strength and capabilities for emergency service.

As regulated utilities, the telephone companies' pricing schedules must be approved by the state public utility commissions. In the past, there has been a relatively rigid structure of fees, usually covering three basic packages of features known as series 100, 200, and 300. The only method of payment was an initial installation charge and monthly rental fees that continued for the life of the system, which could be 20 years.

The impact of competition has caused the major telephone companies to reevaluate the tariff structure, and many of them are beginning to "unbundle" equipment and service prices. More varied pricing arrangements have

evolved, the most notable of which is the Bell System Flexible Pricing Plan (FPP), which is being test marketed to PBX and Centrex users. The FPP allows monthly tariff rates to be included in a cumulative charge that can be 25% to 100% prepaid. If less than 100% is paid, the balance is due monthly over a five- to 15-year period.

A variation of the FPP is the new Com Key tariff for seven- to 34-station key systems. Recently initiated in New Jersey, the tariff allows three-, five-, or eight-year contract periods, during which a customer pays both a fixed monthly rate (not subject to increases), plus a variable rate for the life of the contract. After the contract expires, the customer continues to pay only the variable rate.

Another new pricing plan under consideration is the Maintenance Payment Options Plan (MPOP), which will separate maintenance charges into three options that are essentially similar to those offered by interconnect suppliers. Other proposed plans are the contract pricing allowance plan (CPAP) and the step-down plan (SDP). The CPAP allows increasing discounts on PBX systems that are contracted for varying terms. For example, an eight-year term allows a 5% discount on monthly rates, while a ten-year term allows 9% off. The SDP is similar; it offers five- to ten-year terms and lower monthly rates on the longer term contracts.

In addition to offering new flexibility in payment methods, several Bell companies have been granted reduced tariffs on a cost-of-service basis, the effect of which has been to help them meet competition on selected PBX and key systems. In many cases, the tariff reductions were challenged by interconnect companies when they were proposed to the state regulatory agencies. The charge was that Bell was subsidizing the decreases with message and trunk rate increases. In only four out of 24 rate cases did interconnect companies achieve any degree of success, and in only one of these (Iowa) were the equipment rate reductions completely rescinded.

A significant issue in current and future tariff battles is the impact these tariffs will have on residence user rates. There is considerable controversy among regulators as to whether residence users will be penalized with higher rates as a result of interconnect competition. This issue is not expected to be resolved until there is a more comprehensive understanding of telephone company costs in the establishment of tariffs. It will take several years and strong regulatory pressure to bring about this analysis. In the meantime, the trend toward "unbundling" will continue.

The controversy over the potential impact of rate increases is closely intertwined with such considerations as the telephone companies' return on investment and the need for capital. Although the interconnect industry's current 3% penetration of the PBX installed base is not significant, estimates for 1985 show a possible 30% penetration for PBX systems and 21% for key systems. At the projected penetration levels, telephone companies' capital investment requirements could be appreciably reduced, with two kinds of effects.

One effect will be the possible reductions in the amount of capital telephone companies need. (Outlays for all capital construction by such firms are expected to reach \$25 billion to \$30 billion per year by 1985). Moreover, there would be corresponding reductions in operating and maintenance expenses. Another effect will be reduced revenues and the upsetting of the interstate toll-recovery formula based on the amount of the telephone company plant investment on subscribers' premises.

Finally, the entire concept of rate and cost averaging, which is a subject of controversy itself, may have to be changed so that specific tariff prices are more closely related to costs. The transition to such a pricing philosophy could result in temporary adverse effects on the rate of return on telephone company in-

vestment. However, this in turn would be subject to correction by appeal to the regulatory commissions for relief in the form of generally higher rates.

Most of the impacts discussed so far in this section apply more to AT&T than they do to the independent telephone companies. The reason is that more than 90% of the interconnect industry's activity to date has been in the denser, more concentrated business territories, primarily located in the Bell System. With the exception of GTE, which has felt about half of the remaining activity (also in larger cities), very few of the 1700 independents have experienced telephone interconnect competition so far. However, since most of these companies have very few PBX or key installations to start with, even the loss of one customer's equipment can have a significant impact.

Although most independent telephone companies are as concerned as AT&T is about the future impact of interconnect, the ones that will be most affected are those that operate within 75 miles of a sizable city. Within this range, a local interconnect supplier can extend its coverage and still maintain cost-effective maintenance coverage. There are probably more than 100 small telephone companies that fall into this category.

Independent telephone companies combined have about 13% of PBX and key telephones. Interconnect penetration in the independent territories is currently about 10% of that in AT&T territory and is not expected to exceed this level.

It is interesting to note that two of the largest independents, GTE and United Telecommunications, UTB, have hedged their positions by actually participating in the interconnect industry. GTE's subsidiary Automatic Electric (AE) not only sells equipment to interconnect suppliers but also directly to end users. (The company also provides installation

and service). UT's subsidiary, United Business Communications (UBC)—formed in 1970—is one of the leading national interconnect suppliers. Also, UT's North Electric Supply subsidiary is the largest distributor of station equipment to the interconnect industry.

It is presently difficult to tell how long these subsidiaries will remain in the framework of their parent companies. UT appears to show interest in selling all or part of UNC, while GTE-AE is reported to be considering phasing out its end user sales. Another related development is the current ITT suit seeking divestiture of GTE-AE.

IMPACT ON USERS

As a group, business users appear to have gained the most from the emergence of the interconnect industry. They now have a much wider choice of suppliers, products, features, and procurement approaches at generally lower prices than they did before the Carterfone decision. The intense competition under way appears to be creating a situation similar to that in the computer industry where the user's choices are continually expanding.

Enterprises in essentially every business category have become interconnect users, from large manufacturers and hotels with several thousands of phones to small companies with only a few. Customers have been attracted to interconnect equipment because it offers potentially lower costs, additional features not currently available with telephone company equipment, and protection against potential rate increases. Dissatisfaction with existing local telephone company service and the tax depreciation advantages afforded by owned equipment have also been contributing factors.

Although many of the options listed in the accompanying table can be obtained from telephone companies under more structured packages of offerings, interconnect suppliers have been much more aggressive in promoting utilization. Frequently, users that are initially attracted by the cost savings of interconnect

systems end up willingly paying more for extra offerings that appeal to them. Although advances in technology and intensified competition should lower basic equipment prices, increasing labor and other inflationary costs, plus expected increased demand for optional features, will force total system prices slightly higher each year.

SAMPLE FEATURES AND OPTIONS AVAILABLE

Call Transfer by Station User. Incoming and outgoing calls can be transferred to another extension without operator assistance.

Unattended Night Answering from Any Station. When the operator is on duty, any station can be up receiving calls by direct dialing (upon hearing a tone ring).

Consultation Hold. On a long line (1 line without use of a third button), the user can hold an incoming or outgoing station on internal call and then return to the outside caller.

Add-on Conference. A third party can be added to a two-party conversation if one participant dials the third party's number directly.

Call Forwarding. All incoming calls on some PBXs can be rerouted automatically to another station by dialing the number of that station.

Hands-free Operation. With a speaker horn attachment, calls can be answered without lifting the handset.

Remote Call Pickup. Any memory station can answer any number of extensions phones, usually by dialing the number of the phone that is ringing.

Station Camp on with Ring Back. If the interconnect party is busy or busy, the calling party can camp on the line. When the called party becomes free, the interconnect party is automatically reconnected. When he lifts up his phone, the calling party's phone rings, indicating the busy phone is now free.

Call Identification. Supplying different signals, inform the user who the incoming phone is, the interconnect.

Call Override with Private Entry. Select a station to be occupied. If a call is placed to that station, the message is not heard. The user can be called side phone cannot hear the message. Selected phones may be programmed to use this feature.

Station Hunting (or Forwarding). If the called party is busy, the user can call a number and the system will automatically transfer the call to the next available station.

Music on Hold. When a station is busy, the user can be transferred to a music on hold tone. The user can be transferred to a music on hold tone.

Full Diversion or Call Forwarding. The user can be transferred to a full diversion or call forwarding feature. The user can be transferred to a full diversion or call forwarding feature. The user can be transferred to a full diversion or call forwarding feature.

Comparison of costs for similarly equipped interconnect and telephone company systems often lead to different results, depending on

who is making the comparison and the assumptions used. The main reasons are variations in payment plans, time periods, procurement practices, and especially the type of financial analysis utilized.

Typically, the telephone companies have a one-time installation charge (if a system is being replaced) and a monthly equipment rental (or operating lease). Annual increases in equipment rates by telephone companies have varied over the past ten years from 0% to 10%. There also is often a termination charge (on PBX systems) if the equipment is removed before three to five years have elapsed. Maintenance charges are included in the monthly payments.

The interconnect suppliers generally offer contracts for outright purchase or various leasing arrangements which provide ownership to the user or the vendor. Most of the contracts run for ten years and include a one-year warranty with no charge for maintenance during that time. Following the warranty period, most interconnect companies offer two maintenance options:

One- to ten-year contracts, payable monthly for each station

Time and material charges at agreed-upon rates, on a per-call basis

The majority of current users wait until the first year is over before they decide; others sign up initially for one of the plans. Charges for telephone moves and changes are normally billed separately at prevailing rates. One additional important charge that interconnect users incur is the monthly fee for the telephone company connecting arrangements currently required for each outside trunk circuit (typically \$5 to \$10 per trunk for PBX and key systems).

There are usually two ways of comparing equipment costs. One is on the basis of purchase, and the other is on the cost of monthly lease or rental payments over a typical ten-year period. Prices for purchasing total systems generally range from \$300 to \$1000 per

telephone station, depending on the types of equipment installations and features. Monthly charges for lease or rental range from \$4 to \$14 per telephone, plus a downpayment or installation charge of 10% to 20% of the purchase price. Maintenance charges of \$1 to \$3 per station per month may be included in these figures or may be additional, as is the case for most interconnect suppliers.

As an example, an installed 100-telephone PBX system could cost from \$30,000 to \$100,000, depending on the configuration (number of trunks, key phones, or features). Costs (from a telephone company) could range from \$400 to \$1400 per month, plus a \$5000 to \$10,000 initial charge either for installation or downpayment. For interconnect systems, if the maintenance charge is not included, the additional monthly fee for continued maintenance after the first year would be from \$100 to \$300.

A more detailed trade-off cost analysis would include the following considerations:

Interest charges (included in lease)

Return on investment

Cash flow

Charges for relocating equipment

Connecting arrangement charges

Tax considerations, such as depreciation, investment tax credit, excise, sales, and property

Rate increases

Maintenance charge increases

Insurance charges

Salvage value

Of equal importance with cost and feature comparisons in the user's decision making process is the reliability of the potential supplier, including his stability, experience, service capabilities, and responsiveness. The interconnect industry is still too new and too fluid to provide any solid basis for assessing these

characteristics. However, many users make sure that their contracts have provisions to cover such contingencies as the supplier's going out of business. Although this has occurred in some cases, contract arrangements have provided service and maintenance backup.

Several surveys of user satisfaction with current interconnect systems indicate responses ranging from complete satisfaction with all aspects to total dissatisfaction and requests for removal of systems. (These results are not necessarily different from experiences

with the telephone companies.) The major problems and complaints usually occur in the first six months of installation and are primarily related to equipment malfunction or supplier inability to provide all features in the agreed time. In most cases the problems are solved, but the process can be lengthy and frustrating for the user. On the whole, though, most users appear to be willing to take the attendant risks, as is evidenced by the continually growing number of interconnect customers.

EXHIBIT 23.—*Testimony of Yog Varma Before State of New York Public Service Commission (Excerpts)*

STATE OF NEW YORK PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF YOG VARMA, PUBLIC SERVICE COMMISSION, CASE 25290

* * * * *

Question. Mr. Varma, what conclusions do you draw from the results shown in Exhibit?

Answer. The results shown in Exhibit clearly indicate that the Company's auxiliary services are a burden on the "Basic" monopoly services on a fully allocated cost basis.¹

Investment made by the Company to provide auxiliary services in 1970 was not adequately covered by the net earnings realized from such services as a class, on a fully allocated cost basis. The Company's fully allocated cost results shown in Exhibit 105 are erroneous and its conclusions drawn on Tr 2991, Lines 15 through 23 and based on Exhibit 105 should not be relied upon.

1970 FULLY ALLOCATED COST STUDY AS ADJUSTED BY STAFF

SUMMARY OF RESULTS

STAFF SUMMARY OF RATES OF RETURN—1970

[In percent]

	Basic	Private line	Vertical
Median.....	5.21	0.63	0.64
High.....	5.36	1.31	0.97
Low.....	5.06	-1.51	0.21

RATES OF RETURN COMPUTED BY STAFF—1970

[In percent]

Method	Basic	Private line	Vertical
1.....	5.24	1.07	0.21
2.....	5.06	1.03	0.92
3.....	5.36	-0.15	0.53
4.....	5.08	0.20	0.62
5.....	5.20	-1.51	0.90
6.....	5.24	1.08	0.24
7.....	5.36	-0.16	0.56
8.....	5.10	1.31	0.66
9.....	5.22	0.22	0.97
10.....	5.06	1.03	0.89

¹ These auxiliary services which are being subsidized by the "Basic" Services include among others, Private Branch Exchanges, Key Telephone Systems, Teletypewriter and Data Service, Princess, Trimline and Touchtone instruments, Residence and Business Extensions, etc.

"BASIC" INVESTMENT, EXPENSES AND REVENUES COMPUTED BY STAFF—1970

Method	Rate base	Expense ¹	Revenues ²
1 -----	\$2,573,924,337	\$945,598,921	\$1,080,480,578
2 -----	2,573,924,337	950,356,371	1,080,480,578
3 -----	2,576,659,572	942,823,958	1,081,014,051
4 -----	2,573,924,337	949,474,044	1,080,282,371
5 -----	2,576,659,572	946,955,615	1,080,825,866
6 -----	2,569,136,285	945,598,921	1,080,210,209
7 -----	2,571,570,450	942,823,958	1,080,721,888
8 -----	2,573,123,978	949,074,291	1,080,281,123
9 -----	2,575,853,732	946,277,394	1,080,808,798
10 -----	2,574,009,050	950,111,511	1,080,477,825

¹ Includes Federal income tax.² Includes book other income.

"PRIVATE LINE" INVESTMENT, EXPENSES, AND REVENUES COMPUTED BY STAFF—1970

Method	Rate base	Expense ¹	Revenue ²
1 -----	\$286,493,530	\$73,678,935	\$76,758,714
2 -----	286,493,530	73,800,075	76,758,714
3 -----	287,399,357	77,147,443	76,717,264
4 -----	286,493,530	76,246,625	76,825,058
5 -----	287,399,357	81,158,293	76,808,625
6 -----	282,022,137	73,678,935	76,723,932
7 -----	282,633,775	77,147,443	76,707,687
8 -----	280,901,680	73,021,897	76,710,579
9 -----	281,342,331	76,060,527	76,680,334
10 -----	286,377,903	73,808,746	76,759,525

¹ Includes Federal income tax.² Includes book other income.

"VERTICAL" INVESTMENT, EXPENSE AND REVENUES COMPUTED BY STAFF—1970

Method	Rate base	Expense ¹	Revenue ²
1 -----	\$801,416,362	\$326,639,326	\$328,332,364
2 -----	801,416,362	320,939,387	328,332,364
3 -----	797,629,782	323,510,263	327,717,946
4 -----	801,416,362	323,540,204	328,469,688
5 -----	797,629,782	320,778,667	327,925,773
6 -----	805,067,524	326,639,326	328,601,167
7 -----	800,875,389	323,510,263	327,994,517
8 -----	801,201,128	323,225,647	328,536,145
9 -----	796,916,277	320,178,161	327,910,660
10 -----	801,452,985	321,189,091	328,334,333

¹ Includes Federal income tax.² Includes book other income.

**EXHIBIT 24.—State of Michigan Public Service Commission Opinion Re
Michigan Bell Revision of Schedule of Rates and Charges**

STATE OF MICHIGAN, BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of Michigan Bell Telephone Co. for authority to revise its schedule of rates and charges.

Case No. U-4293

At a session of the Michigan Public Service Commission held at its offices in the city of Lansing, Michigan, on the 21st day of December, 1973.

Present: Hon. William G. Rosenberg, Chairman; Hon. Lenton G. Sculthrop, Commissioner; Hon. William R. Ralls, Commissioner.

OPINION AND ORDER

* * * * *

The Commission finds that Applicant does not maintain its accounting records to correspond with particular product lines or service offerings and does not directly associate units of equipment with the actual cost of any particular type of telephone equipment. Moreover, this absence of quantitative data in some instances caused Applicant to rely upon its experts to include subjective decisions in its cost study formula. As more fully set forth hereafter, the Commission finds that Applicant must initiate changes in its record keeping and cost service studies.

* * * * *

Additionally, the Commission finds that the present rate structure for these services was established in 1955 and is outdated. Eighteen years have passed since any major rate restructuring and a significant number of new service offerings have become available. Telephone equipment and installation costs have increased significantly and new tariffs must be established to permit fair and equitable rates.

The Commission further finds that the proposed rate structure is not arbitrary. In the past, one item of service was priced to cover the cost of several items of service or equipment. Today, it is important that each piece of equipment stand upon its own as it relates to revenue and that current rates be sufficiently flexible to cover the increased availability of new service features. The Staff's proposed rates meet these objectives, are reasonable and therefore not arbitrarily determined.

* * * * *

THEREFORE, IT IS ORDERED that:

* * * * *

D. Michigan Bell Telephone Company shall establish minimum accounting records that will allow the Staff and Commission to make meaningful studies and audits. Specifically, Applicant shall:

(1) Provide audit trails in payroll, maintenance and operating expenses, administrative expenses and plant accounts.

(2) Provide for historical cost. This data shall consist of disposition units, size of units, type of units, inventory of disposition units, and current records reflecting cost of these units, and shall establish property unit records for each type and size of disposition unit showing units owned and dollars represented by these units.

(3) Maintain payroll records that relate these costs to construction, operating and maintenance expenses by disposition units, size and type.

(4) Make changes in necessary journals, ledgers and summaries to permit meaningful and expedited audit procedures.

(5) Obtain concurrence of the Accounting Staff of this Commission in order to effect the required accounting changes required herein and shall file with this Commission a timetable of implementation by March 31, 1974.

E. All contentions of the parties not herein specifically determined are hereby rejected, the Commission having given full consideration to all evidence of record and arguments made in arriving at the findings and conclusions set forth in this Opinion and Order.

The Commission specifically reserves jurisdiction of the matters herein contained and the authority to issue such further order or orders as the facts and circumstances may require.

[SEAL]

MICHIGAN PUBLIC SERVICE COMMISSION,
 WILLIAM G. ROSENBERG, *Chairman*.
 LENTON G. SCULTHORP, *Commissioner*.
¹ WILLIAM R. RALLS, *Commissioner*.

By the Commission and pursuant to its action of December 21, 1973.

EARL B. KLOMPARENS,
Secretary.

OPINION OF COMMISSIONER WILLIAM R. RALLS, CONCURRING IN PART, DISSENTING
 IN PART

(Submitted on December 21, 1973 concerning Opinion and Order issued on
 same date)

* * * * *

This Commission has been urged by all parties to this proceeding to adopt rigorously cost-justified rates for commercially used PBX, Centrex, and Key services. It is clear from the voluminous record devoted to this issue that comprehensive and reliable cost data concerning these matters could be better developed, and would be useful in the ratemaking process. One would also assume that such improved data will become increasingly necessary to permit management to respond to the new competitive commercial market. Nevertheless, in the judgment of this Commission sufficiently complete and verifiable information exists to begin the process of cost-justified pricing, and we have so Ordered. While this first step is undoubtedly important to both the enterprises providing such services and their customers, this step is even more important as a precursor of future telephone pricing policies to be adopted by this Commission.

It must be emphasized that this action is a dramatic break with past practice, and with literally hundreds of other Bell Telephone tariffs approved in past years by this Commission. It is my belief that this apparent anomaly will become the rule, and that the Commission should as a policy adopt cost-justified rates for all intrastate telephone services, subject to necessary socially merited deviations. It is characteristic of the Bell System that there now exist numerous imaginatively designed services which would appear to raise cost justification questions, and which must come to the notice of this Commission in the near future. Some such examples are: wide area telephone service (WATS), late night long distance discounts and flat rate basic charges.

Similar questions should be raised concerning the policy of picture residential service on the basis of the size of the exchange, which has in practice meant that the Detroit area has the highest basic charges in the State. Since I continue to differ with my colleagues concerning the diminution of such geographic variations in service charges, I believe that this topic will benefit from further thorough examination.

* * * * *

CONCLUSION

It should be unnecessary to emphasize that making social judgments amongst competing groups of ratepayers is the function of this Commission, not a regulated utility. Subsidization of some subscribers necessarily means that other subscribers will pay more than their own service costs—unless such subsidy is paid for by the utility out of its permitted earnings. A regulatory body can only discharge its function of ratemaking in the public interest when it has the underlying facts, and it is the responsibility of the Company to come forward with the necessary information. Only by having the facts and intelligently applying them can this Commission recognize the proper impact of competition. There is no question that a new look at telephone ratemaking is long overdue in Michigan.

WILLIAM R. RALLS,
Commissioner.

December 21, 1973
 Lansing, Michigan

¹ Commissioner William R. Ralls is issuing a separate Opinion, Concurring in part, Dissenting in part.

**EXHIBIT 25.—New York State Public Service Commission Memo Re Tariff
Revisions For New York Telephone Co. Call Director Equipment**

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

July 10, 1973

TO: THE COMMISSION
FROM: THE COMMUNICATIONS DIVISION
SUBJECT: New York Telephone Company
P.S.C. No. 800 - Telephone

Section 8
Contents, 24th Revised Page 1
7th Revised Page 4B

ISSUED: March 12, 1973 EFFECTIVE: July 20, 1973

Section 8
5th Revised Page 4C

Section 15
26th Revised Page 5

ISSUED: July 9, 1973 EFFECTIVE: August 15, 1973

SPECIAL PERMISSION APPLICATION: T&T 3064

TERRITORY: The entire operating territory of the company in
New York State

NATURE OF REVISIONS: To introduce rates, charges, rules, and
regulations for 10' and 20 button Call
Director Equipment.

RECOMMENDED THAT: 1. The tariff revisions listed above be
permitted to go into effect July 20, 1973,
on less than statutory notice, as required.

2. The requirements of 16 NYCRR Section
630.70 relating to newspaper publication
be waived as required.

3. Clause four of the Commission's Suspension
Order in Case 26370 be waived as required.

REVENUE EFFECT: Unknown.

COMPLAINTS RECEIVED: Five, requesting a hearing at which a demonstration of the anticompetitive and noncompensatory aspects of the company's proposed rates can be presented.

Background

On March 17, 1973, New York Telephone Company filed tariff revisions to become effective May 1, 1973 which provide rates, charges, rules, and regulations for 9 and 19 line capacity Call Directors, a new service offering. This equipment will complement the company's existing product lines for 6, 12, 18, and 30 button key telephones, and there appears to be a considerable market for these new instruments. The proposed tariff regulations prohibit certain applications of the new equipment, in order to preserve the market for existing services, and to simplify the instructions, training, and installation procedures required for these sets. Nevertheless, by the company's admission, there will be considerable substitution of existing devices for the new over the next several years. The degree of substitution will be dependent, among other things, upon the rates and charges for each type instrument, the degree of stimulation the company fosters, if any, and overall economic conditions in terms of expansions and relocations of existing customers. To a small extent, it will also be dependent upon the market penetration of "interconnect" competitors.

The company's original estimated changes in station composition, which accompanied the tariff filing, indicated the possibility the company would spend vast sums of money to produce very little real changes in revenue. In order to satisfy Staff's concern with this aspect of cost and revenue effects, the company thrice postponed the effective date of the tariff revisions (May 2 Session - Item 527, May 15 Session - Item 520, May 30 Session - Item 507).

Staff's inquiry into the reasonableness of the cost and revenue implications attendant to this new service offering was then hampered by the company disclaiming every substantial aspect of its initial supporting documents provided prior to May 31, 1973. Only information provided since that time, including cost and revenue requirement information delivered June 6, 1973, constituted the company's revised case in support of its proposed rates and charges. Staff was unable to derive relevant conclusions on such short notice but even neglecting all costs associated with the premature substitution of instruments, presently in service, the proposed rate(s) specifically for the 9 line Call Director could be construed as noncompensatory.

Staff was additionally concerned that the 9 line Call Director is presently offered by Illinois Bell at a monthly rate of \$12.00 as compared to New York Telephone's proposed rate of \$8.00.

Consequently, the Division requested and the company reluctantly agreed to an additional postponement to July 15, 1973 - June 12 Session - Item 515. Further postponement to July 20, 1973 was obtained - June 29 Session - Item 513 to provide for Commission review of the following.

Initial Proposal
Phase I - March 19 - April 8

Company Position

The initial proposed rates and charges were:

	<u>Monthly</u>	<u>Installation</u>
For 10 button sets	\$ 8.00	\$35.00
For 20 button sets	\$15.37	\$66.46

The initial attachments to the filing included:

1. "Annual Revenue Effect" sheet showing a \$1,500,000 net revenue gain.
2. A "Revenue Requirement Cost Development" for 10 button telephones showing a 17.21 percent after tax return on depreciated cost - (Total Book Cost \$149.00).
3. A "Revenue Requirement Cost Development" for 20 button telephones showing a 22.36 percent after tax return on depreciated cost - (Total Book Cost \$252.00).

Staff Position

Staff recalculated the company's "Annual Revenue Effect" (#1 above) to show a net revenue loss, vis:

	<u>Type</u>	<u>Quantity</u>	<u>Ann. Rev. Unit*</u>	<u>Total Ann. Rev.</u>
Installations	10	33,000	\$103.00	\$3,399,000
	20	6,500	197.73	1,285,245
		<u>39,500</u>		<u>\$4,684,245</u>
Removals	6	7,150	60.89	435,364
	12	7,000	137.12	959,840
	18	14,500	193.30	2,802,850
	30	1,900	308.37	585,903
		<u>30,550</u>		<u>\$4,783,957</u>
Net Gains		8,950		(99,712)

*Includes annual revenue contribution from installation charge.

Meanwhile Staff additionally requested and was subsequently provided:

1. Catalog price information for materials.
2. "Estimate details" of each cost development.
3. Estimated removal costs.
4. Estimated disposition expenses of displaced equipment.
5. A relative benefits study or in lieu of a multi-year estimate of activity in these product areas, demonstrating a "go-no go" cost/revenue comparison).

Phase II - April 9 - May 30

Company Position

The company provided detailed cost estimates (#2 above) based on 1972 catalog prices and labor showing proposed costs to be:

	<u>Apparatus (231)</u>	<u>Installation (232)</u>	<u>Total Installed Cost</u>
10 button set	\$63.00	\$123.00	\$186.00
20 button set	\$93.00	\$196.00	\$289.00

First year installation expense would therefore be \$8,016,500.

Refurbishing expense for the 30,500 disconnected sets was estimated at \$422,653. Disconnection labor expenses were estimated at zero.

No concrete reuse plans were formulated. The company did indicate it would reduce or discontinue normal new purchases to allow for depletion of expanded supplies.

Ensuing years estimated installations were:

	<u>10 button</u>	<u>20 button</u>	<u>Total Cost</u>
Second Year	39,500	4,600	\$8,674,400
Third Year	16,000	3,000	\$3,843,000
Fourth Year	16,000	3,000	\$3,843,000

The total (first) four year investment for 121,600 new sets (at 1972 prices) would be \$24,478,900.

The company omitted substitution effects after the first year, admitting some initial year displacement would carry-over for at least three years. It offset its refurbishing expenses and lost revenues from displaced equipment with a "Savings - due to reuse of Reconditioned Equipment over new purchases."

All-told, its four year revenue/cost comparison for "go-no go" claimed its revenues would be \$90,200,000 greater by introduction of the new product line. The costs of

introducing the new lines, in excess of not introducing them, were \$26,719,000 spread over the four years.

Staff Position

Armed with the knowledge the company had but 107,800 total stations with over 6 button capacity, Staff had to question how the company would keep all these in service and add 121,600 more in just four years.

If the first years ratio of substitution occurred in the second year 33,100 substitutions would occur in the second year.

Considerable substitution could also have been anticipated in the next two years as the company's annual growth pattern would not justify a 19,000 (10 and 20 button) new station forecast annually.

Assuming 9,000 station substitutions, less than 50 percent, in both the third and fourth years the company would have 82,650 substitutions in the four year period, 63,310 of which would come from existing(107,800) stations with 11 line or greater capacities.

The initial investment in the 82,650 displaced stations would be approximately \$23,284,035. Their annual 'in-service' revenues would be \$13,016,467 at current rate levels.

The 121,600 new sets, costing \$24,378,900 to install alone, would be producing just \$1,128,216 more annually.

(For the 38,950 additional stations that represents additional per station revenue of \$28.95 per year. For the entire 121,600 new purchases only \$9.28 per station per year.)

The company declined to leave with Staff a computer produced "Relative Benefits - Burden" study produced in keeping with other pricing decision (May 16 - Company-Staff meeting).

Its rationale was:

1. The computer program was for existing products - what happens if rates change?
2. Higher rates would increase competitors chances of selling their services.

The study, conducted at Staff request, had indicated the optimum return situation for the company would be realized by rates considerably higher than those proposed.

(Revised Initial Proposal)
Phase III May 31 - June 6

Company Position

On May 31, 1973 the company revised its first year estimates as follows:

	<u>Type</u>	<u>Quantity</u>	<u>Ann. Rev. Unit*</u>	<u>Total Ann. Rev.</u>
Installations	10	24,049	\$103.00	\$2,477,047.00
	20	2,235	197.73	441,926.55
Totals		<u>26,284</u>		<u>\$2,918,973.55</u>
Removals	6	15,772	60.89	960,357.08
	12	1,924	137.12	263,818.88
	18	3,357	193.30	648,908.10
	30	59	308.37	18,193.83
Totals		<u>21,112</u>		<u>\$1,891,277.89</u>
Net Gains		5,172		\$1,027,695.66

*Includes annual revenue contributions from installation charge.

The anticipated costs and expenses associated with these first year projections are as follows:

Installation Expenses

<u>Type</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total Cost</u>
10	\$205	24,049	\$4,980,045
20	\$319	2,235	712,965
			<u>\$5,643,010</u>

Refurbishing Expenses - Based on 87% Reusals of Removals

<u>Type</u>	<u>Charge/unit</u>	<u>Quantity</u>	<u>Total Cost</u>
6	8.91	13,722	\$122,263.02
12	6.42	1,674	10,747.08
18	19.01	2,921	55,528.21
30	20.19	51	1,029.69
			<u>\$189,568.00</u>

Book Value of Junked Sets - Based on 13% Junking

<u>Type</u>	<u>Orig. Unit Cost</u>	<u>Avg. Dep. Value .676%</u>	<u>Quantity</u>	<u>Total</u>
6	32	\$ 21.63	2,050	\$44,345.60
12	70	47.32	250	11,830.00
18	127	85.85	436	37,431.47
30	185	125.06	8	1,000.48
				<u>\$94,607.55</u>

(Average Revenue Requirement at 41.7% = \$39,451)

Book Value of Undepreciated Installation Expense

<u>Type</u>	<u>Orig. Unit Cost</u>	<u>Quantity</u>	<u>.983% of Total Orig. Cost</u>
6	89	15,772	\$1,379,844.96
12	140	1,924	264,780.88
18	231	3,357	762,273.99
30	350	59	20,298.95
			<u>\$2,427,198.78</u>

(Average Revenue Requirement at 62.0% - \$1,504,863)

The 21,112 substitutions involve 20,916 units at \$205 and 196 units at \$319, an expenditure of \$4,350,304 to produce \$301,616 additional revenues.

The 5,172 new stations will consist of 3,133 units at \$205 and 2,039 units at \$319, an expenditure of \$1,292,706 to produce \$725,870 new revenues.

By the company's (verbal) admission these first year activities could be anticipated to reoccur at approximately the same volumes in at least the second and third years of new product life.

Staff Position

Staff was given verbal explanations of the derivation of all revised station activity estimates. The company has requested, and Staff has to date accepted, that no written figures meaningful to market-analysis by competitors be provided as the company's figures are being reviewed by an intervenor, Fassler & Oestreicher, attorneys for Telecommunications Sciences, Inc. - later discussed under complainants.

The company's substitution figures, which seem questionably low to Staff for 12, 18 and 30 button Call Directors, are predicated on the assumption that relatively few of the company's customers would be aware of these new service offerings. The company proposed a low profile introduction of these instruments, planning primarily to use them in competitive situations.

Testimony of [redacted] dated 10/1/67

catalog prices and current labor rates compare to the original ones as follows:

	Apparatus (23%)		Installation (23%)		Total Installed Cost	
	Orig.	Rev.	Orig.	Rev.	Orig.	Rev.
10 button set	\$63.00	\$56.00	\$123.00	\$149.00	\$186.00	\$205.00
20 button set	\$92.00	\$80.00	\$166.00	\$229.00	\$258.00	\$309.00

Staff requested and the company provided revised rate-of-return studies based on the revised total costs. (The company's original rate-of-return studies were predicated on the incremental installed cost of the new devices above the ordinary installed cost of an average black single line telephone.)¹ In order to increase its projected rate-of-return, the company reduced its estimated maintenance from the industry applied amount average to some lesser figure. Consequently the projected rate-of-return on depreciated cost dropped to 7.67% for 10 button sets and 13.06% for 20 button sets. The 10 button return is considerably below the 10.5% objective the company has set for itself for all vertical services.

In order to satisfy Staff's concerns with respect to maintenance expense and a 10.5% (objective) rate of depreciated cost, the company was asked to recalculate its revenue requirements.

J. Case 26790 - Regarding New York Telephone Company rates for Data Access Arrangements

Staff and the company conclude that the rates and charges... should be based...on...(total) costs...

Revised Proposal
June 6 - Current

Rate Determination Studies

According to the company, annual revenues of \$119.80 for 10 button sets and \$187.84 for 20 button sets are necessary under account average carrying charges^{2/} to achieve a 10.5% return. These revenue levels, derived via traditional methodology for all new Supplemental Service items, are prima facie indication that the new services would be compensatory.

The \$15.37 monthly rate for 20 button Call Directors coupled with a \$66.46 Installation Charge (allocated over five years) provides \$197.73 in annual revenue. Attachment 3 shows the development of a Rate of Return of 12.33% for this new offering, using traditional revenue requirement and rate design methodology for all new Supplemental Services. The proposed rates for the 20 button Call Director appear to be compensatory based on cost information most recently supplied by the telephone company. Accordingly, no further discussion of this item is required. The proposed 20 button Call Director rates and charges are the same as those which currently apply to the company's 18 button Call Directors.

Discussion

The \$119.80 annual revenue requirement for 10 button Call Directors can be met by a monthly rental of \$9.15 coupled with a \$50.00 Installation Charge. The \$50.00 charge should

^{2/}The carrying charge for location life differs from the account average consistent with the location life carrying charges applied to all key equipment stations, in Case 26370 - General Rate Increase and Case 26426 - Cost of Service and Rate Structure. That location life is 5 years as opposed to the account average of 8.1 years.

serve to deter the substitution which may occur in order to take advantage of lower monthly rates for equipment which equally satisfies current customer line capacity requirements. The current rate for 12 button Key Chiefs is \$11.06, and, as previously stated, for 18 button Call Directors it is \$15.37. Both vehicles are used extensively by customers whose line (and feature) requirements could be served by 10 button Call Directors.

Subsequent Filing

In view of the Staff initiated re-evaluation of the company's cost's, the company on July 9, 1973, reissued proposed rates and charges of \$9.15 monthly and a \$50.00 Installation charge for 10 button Call Directors. These proposed rates for the 10 button Call Directors produce a Rate of Return of 10.5% as shown in Attachment 4, using traditional revenue requirement and rate design methodology. These new rates now proposed by the company for 10 button Call Directors appear to be compensatory based on cost information most recently furnished by the telephone company. The letter accompanying the filing explains the propriety of the revisions, and requests waiver of the statutory waiting period and of the customary newspaper publication requirements, in order that rates and charges for both 10 and 20 button Call Directors may become effective simultaneously on July 20, 1973. In addition, the July 9 transmittal letter reiterates the company's request for waiver of Clause four of the Commission's Suspension Order in Case 26370 as required to authorize the new service offerings.

The company completed publication of the originally proposed 10 button Call Director rates and charges prior to May 1, 1973, the originally scheduled effective date. Proof of such publication was forwarded to the Commission May 16, 1973. At Staff's recommendation the company will republicize the revised proposed rate and charge for 10 button Call Directors in each of the four consecutive weeks as required by NYCRR Section 630.70. However, only one publication will occur prior to the requested effective date of July 20, 1973, which presumes waiver of the statutory filing period.

Discussion

In light of the late revision date, July 9, the uncertainty of the company's original activity estimates and the diverse opinions of complainants, company, and Staff as to the substitution, no quantitative cost or revenue effects on an 'overall' companywide basis are considered in this memorandum. However, to allay Staff's concern with possible substitution effects a 'tracking system', as outlined in the company letter attached hereto (Attachment 2), should be indefinitely implemented immediately upon introduction of the new offerings. Costs and revenue effect should thus be quantifiable to later dates, and based on the magnitude of each, suggestions made as to their disposition.

The revenues to be derived from these revisions are exempt from the provisions of this Commission's rules relating to compliance with the Economic Stabilization Act of 1970, and from the President's Executive Order No. 11723 dated June 13, 1973, because they will be from a new service offering.

Complainants

To date, the Commission has received five requests for a hearing at which a demonstration of the anticompetitive and noncompensatory aspects of the company's proposed rates can be presented. Principal complainant has been Telecommunications Sciences, Inc., Hartsdale, New York, whose attorneys, Fassler and Oestricher, may have posed substantial basis for continuing investigation into the appropriate rates and charges which should be applied to the new offerings. A copy of a June 8, 1973 letter to the Commission which briefly depicts their initial arguments is attached, Attachment I.

Additional complainants include:

1. United Telecommunications Corporation
Colonie, New York
2. Long Island Sound Systems, Inc.
Lindenhurst, New York
3. Teltronics Service, Inc.
New York, New York
4. Litton Telephone Systems Division
Calverton, New York

Telecommunications Sciences, Inc. was advised of the reissued 10 button Call Director rates on July 9, 1973. Its attorney, in turn, promised to advise other complainants of the revised rates and charges.

The company's complaint is continued despite the July 9 rate revision.

Discussion

Staff recognizes from Case 26214, the Rochester Telephone Corporation - Tel Page Corporation - Paging Services dispute, the Commission would prefer not to deny a desirable public service for the length of a formal proceeding on the basis of alleged noncompensatory and anticompetitive pricing.

Consequently, Staff has extracted a proposed interim rate which should avoid the possible danger of noncompensatory supplemental service. To the extent that it lessens the rate differences with the company's existing 12 button and 18 button services, it should lessen the actual substitution which will occur.

The July 9 development of rates and charges for 10 button Call Directors is consistent with the generally accepted development for all Supplemental Service Items.

However, in light of the complainants allegations

- "1. With Respect to Telco's Statistical Submission
2. With Respect to Scrapping of Existing Equipment, and
3. With Respect to Telco's Presentation on a Per Station Basis Rather than on a Per System Basis"

Staff believes that a formal proceeding initiated by the Commission's own motion, to provide a forum for demonstration of the anticompetitive and/or noncompensatory aspects of the company's proposed rates, may be warranted.

Recommendation

It is therefore recommended:

1. That the tariff revisions listed above be permitted to go into effect July 20, 1973, on less than statutory notice, as required,
2. That the requirement of 16 NYCRR Section 630.70 as to newspaper publication of the proposed 10 button Call Director rates be waived as requested herein,
3. That Clause four of the Commission's Suspension Order in Case 26370 be waived as required to provide these new service offerings,
4. That a formal proceeding be initiated by the Commission to permit further inquiry into the propriety, justness and reasonableness of the rates and charges proposed herein.

Respectfully submitted,

RICHARD STANNARD
Chief of Communications
Tariffs and Rates

APPROVED:

NEIL A. SWIFT
Director of Communications Division

FJH/jp

EXHIBIT 26.—*Letter Re Staff Report on Interconnection of New York State Public Service Commission*

STATE OF NEW YORK PUBLIC SERVICE COMMISSION,
May 9, 1972.

To: The commission.

From: Communications division.

Subject: Staff report on interconnection.

Much has been written in the past few years about interconnection of customer-owned equipment to the telephone network. Most material has been written by interconnection advocates with their own private interests or by the telephone industry which likewise has its own special interests. Little analysis and comment from "neutral sources" has been presented. The Communications Division, therefore, has attempted to prepare an objective "primer" on interconnection, drawing on experiences—both in Albany and Washington—in formal interconnection proceedings, informal disputes, tariff proposals, and advisory committees.

Based on the sum of our experience and observations to date, we believe that proposals for interconnection have generated excessive opposition on the part of the regulated telephone industry. Also, perhaps because of the aggressive promotion of interconnection by the FCC, most state regulatory commissions and the NARUC may have shown greater opposition to interconnection than would otherwise be the case.

Opponents of interconnection advance two basic arguments: (1) degradation of the quality of telephone service, and (2) increased rates for basic telephone service resulting from the loss of lucrative terminal equipment markets. Although these concerns are legitimate, they have not been well documented. The Communications Division has concluded that interconnection, carried out under a program of certification and inspection based on nationwide guidelines, but subject to state regulatory control, is technically feasible and will prevent service degradation. While it is too early to tell with any degree of certainty, it is hoped that such a certification and inspection program will be economically attractive to both the telephone industry and interconnection users as compared to the present requirement of connecting arrangements. Such economic competition between methods of interconnection will provide perhaps the greatest incentive to improve interconnection procedures and hardware and ultimately lower the cost of both approaches. Furthermore, there appear to be substantial savings to telephone companies related to interconnection which may well offset revenue losses regardless of the method of effecting the interconnection. Even if they do not, the net effect upon the regulated telephone industry and its ratepayers likely will be small.

Respectfully submitted.

NEIL A. SWIFT, *Director.*

EXHIBIT 27.—*A.T. & T. "General Business Customer Study" Excerpts:
Re Customer Complaints and Desires*

* * * * *

OBJECTIVES OF THE STUDY

The objectives of this study are:

1. To evaluate customer problems relating to communication system capacities.
2. To determine a cross section of existing and future equipment features desired by customers.
3. To measure customer attitude towards various aspects of service, i.e., equipment space requirements, equipment appearance, installation intervals and due dates, etc.
4. To determine current penetration of outside communication products into the market.
5. To evaluate potential market receptivity to equipment of other suppliers.
6. To obtain customer ideas for new communication services and equipment.

RESEARCH METHODOLOGY

One hundred interviews were conducted with general business customers in each of ten cities—a total of 1000 personal interviews.

In order to provide general representation of the business market throughout the Bell System, ten cities with wide geographical dispersion, were selected to reduce any geographical bias. The specific ten cities contributing to the sample also increase the representation of various types of industry, i.e., steel in Cleveland, Ohio, autos in Detroit, Michigan, etc.

The cities are as follows:

- | | |
|--------------------------|---------------------------|
| 1. Albany, New York | 6. Cleveland, Ohio |
| 2. Atlanta, Georgia | 7. Dallas, Texas |
| 3. Baltimore, Maryland | 8. Denver, Colorado |
| 4. Boston, Massachusetts | 9. Detroit, Michigan |
| 5. Chicago, Illinois | 10. San Diego, California |

The sample was obtained through the Telephone Company Marketing Department in each of the ten cities.

* * * * *

10. GENERAL COMMENT ABOUT TELEPHONE SERVICE

The comments made by customers at the end of the interview parallel and emphasize many of the significant findings in the preceding discussion. Three-fifth of the respondents (58%) have nothing negative to say. For them telephone service appears to be satisfactory.

However, those customers (42%) that do have general complaints say:

Servicemen are untrained and slow (10%).

Experience dialing delays (8%).

Equipment is unsatisfactory (7%).

Need more line capacity (6%).

Want lower rates (6%).

Say operators are untrained and rude (5%).

The complaints listed above are more prevalent from some groups of customers than other. For instance:

Servicemen untrained and slow—CENTREX (32%).

Dialing delays—CENTREX (20%).

Equipment unsatisfactory—PBX-Manual (12%).

Line capacity—CENTREX (11%).

Lower rates—Key Systems (9%).

Operators—Key Systems (9%), PBX-Manual (8%).

The general attitude toward telephone service does not suggest any problems that require radical changes. Rather, the complaints represent an aggregation of small problems that go together to create a substantial level of dissatisfaction. Many of these matters occur as businesses expand and place increasing demands on telephone service.

The following chart provides a review of the comments:

GENERAL COMMENTS ABOUT TELEPHONE SERVICE

	Type of telephone service					
	Total	Key sytem main service	Key system behind PBX CENTREX	PBX-manual	PBX-dial	CENTREX
Base: 100 percent equals.....	(1046)	(272)	(151)	(120)	(446)	(54)
Positive comments about service (percent).....	33	32	21	34	36	37
Like phone service (in general).....	22	24	11	24	24	30
Phone service adequate.....	4	2	8	3	5	2
Negative comments about service.....	42	43	13	44	46	72
Criticize service men; untrained, slow.....	10	5	2	10	13	32
Dialing slow, can't get party.....	8	7	3	12	8	20
Equipment poor, unsatisfactory.....	7	6	4	12	7	6
Need more line capacity.....	6	8	2	6	6	11
Should lower rates.....	6	9	1	4	5	6
Criticize operators; rude, untrained.....	5	9		8	4	2
Long distance service unsatisfactory.....	4	8	1	4	3	4
No comments offered.....	29	28	66	24	21	4

CONCLUSIONS

This study was purposely designed to be general in nature and to represent a cross-section of the general business customer market. The findings provide an indication of customers' needs and desires for specific operating features associated with Key Telephones, PBX and CENTREX systems. They provided insight into the attitudes of this group of customers toward certain Bell System services, policies, practices and competition. Since a wide variety of business types were included with a geographical dispersion over ten cities, the results are indicative of business customers in general. It should be emphasized, however, that the results are not statistically projectable to the general business market.

The findings should be used as a basis for evaluating market strategy in the general business market. They should also be helpful in designing features which customers desire and eliminate or alleviate those aspects of service which are in disfavor with our customers.

Further research work should be undertaken for the specific features that appear to have market potential with emphasis on the price sensitivity of these features.

EXHIBIT 28.—*California Public Utilities Commission Opinion Re Tariffs Covering Hospital Interphone System Service*

DECISION No. 74618

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

FISHER BERKELEY CORPORATION, a California corporation, Complainant, vs. PACIFIC TELEPHONE AND TELEGRAPH CO., a corporation, Defendant.

In the Matter of the Suspension and Investigation on the Commission's own motion of tariffs covering the furnishing of Hospital Interphone System Service by The Pacific Telephone and Telegraph Company.

Case No. 8662 (Filed August 3, 1967)

Case No. 8663 (Filed August 4, 1967)

McKnight Brunn, Helzel, Leighton, Brunn & Falconer, for Fisher Berkeley Corporation, complainant.

Robert E. Michalski, for Pacific Telephone and Telegraph Company, defendant in Case No. 8662 and respondent in Case No. 8663.

Warren R. Thorpe, for Valley Memorial Hospital, interested party.

George A. Amaroli, for the Commission staff.

OPINION

* * * * *

FINDINGS AND CONCLUSIONS

We find that:

* * * * *

16. Western Electric prices may be set and charged without reference to cost or by arbitrary modification of the allocation of manufacturing costs, reflecting undisclosed motives and policies of management.

* * * * *

EXHIBIT 29.—*Report on Interconnection and Competition, John R. Brown, Sales Engineer, Southern New England Telephone Co. (Excerpts)*

INTRODUCTION

This report reviews eight areas of concern brought about by interconnection and competition. It attempts to indicate the indepartmental actions—short range, continuous and long range—that will be required in order to cope with the future.

TABLE OF CONTENTS :

- Chapter 1. Product Line.
- Chapter 2. Market and Customers.
- Chapter 3. Competitor's Themselves.
- Chapter 4. Pricing.
- Chapter 5. Legal and Regulatory Factors.
- Chapter 6. S.N.E.T. Sales Force.
- Chapter 7. Marketing Information System and Reference Material.
- Chapter 8. S.N.E.T.—Internal.

The necessity for conducting this review proceeds from the fact that we have little direction coming from the System regarding the expected impact of interconnection. A.T.&T. has established an Interconnection Committee to give general guidance, but leaves many questions to the operating companies themselves.

S.N.E.T. has initiated several actions designed to meet competition. The Marketing Committee conducted a special session in October, 1968 to explore the ramifications of the then pending interconnection tariffs. A two day off premises session was held in February of this year to define the areas of concern and to identify the constraints which limit our ability to operate effectively in a competitive atmosphere. Further meetings devoted to this subject have been held throughout the year.

The Revenues Department has been reviewing new pricing concepts and strategies as well as developing the necessary tariff filings for interconnection. The Engineering Department is evaluating the performance and features of non-Bell equipment for use with our existing product line. The Marketing Department has augmented its field sales force, documented competitive activity for the last eighteen months, reviewed the adequacy of the product line and is developing a competitive training course.

This review is an attempt to pull together the areas of concern, to define the problems and to chart possible courses of coordinated action.

* * * * *

CHAPTER 1.—PRODUCT LINE

CHOICE

The new interconnection policies will place an unprecedented strain on our product line. We no longer enjoy the monopoly of one year ago. This environment, which permits the interconnection of just about any competitive product to our network, is new to the telephone industry as we have known it. Customers now have a choice of products to choose from and, in order to remain on top, we will have to:

1. Change our traditional attitudes.
2. Take positive, dynamic action steps to protect old markets and products and to penetrate emerging markets.

MARKET DEVELOPMENT

An extensive market research effort is a necessity to remain competitive in today's environment. S.N.E.T., with support from A.T.&T., must:

1. Define market needs.
2. Develop products to fill those needs.
3. Determine price sensitivity levels for the products.

In the past the Bell System has been slow to react. In a competitive environment it is essential to *anticipate* the demands of the marketplace, act before being forced to react.

SERVICE INTERVALS

Installation intervals must be shortened. We must provide service to customers when they want it or someone else will. Hopefully the new Western Electric facility in Denver will reduce system service intervals in the PBX product line. Realistically, S.N.E.T. will probably have to go to outside suppliers to fulfill many advantages in going to outside suppliers:

Better intervals.

Technically sound equipment to fill various voids (why try to design a product which is already available on the market?).

We become more competitive by marketing their products.

Prices often compare favorably.

Quicker reaction time since they will want to keep our business.

Less customer floor space required in some instances.

S.N.E.T. installs (perhaps less expensively) rather than Western Electric.

FUTURE NEEDS

In the future we must know what products our customers want. We ought not to develop products and then create a market. Knowing our customers' desires, and either designing products to meet these desires, or buying from outside suppliers to fill the void, are the keys to a successful marketing effort. Other factors such as price, service and salesmanship also enter into the picture, but providing products to meet a *well-researched market* is a necessary first step in the chain.

Let's take a look at four areas: PBX/CENTREX, Station Equipment, Data and Basic Exchange Service.

* * * * *

CHAPTER 2.—MARKET AND CUSTOMERS

1. Define our market needs.
2. Develop products to fill the needs.
3. Develop price sensitivity levels.
4. Develop future competitive strategies.
5. Determine our vulnerable products and services.
6. Learn about both our customers and our competitors.

Of course our vulnerability studies must be conducted continuously. We should systematize the results of our sales contacts which would give us a continuous source of market information. Computer printouts by UCB showing inward and outward movement will give us a quarterly picture of vulnerable products and services. (Actually, we could even get specific sorts, e.g. steel companies in Wallingford, whenever they were needed.)

INDUSTRIES

At this point we have come to certain conclusions about specific industries. In an A.T.&T. report issued in December, 1968, it was reported that the Hotel-Motel industry would welcome the opportunity to purchase private systems, concluding that we were most vulnerable in the area of PBX stations and dial equipment. Our specialists agree that we are vulnerable and we recently lost the Holiday Inn account in Milford to a private supplier. There is every indication that this is only the first in a series of competitive installations. A nation-wide study of Hotel-Motel owners by a non-Bell system company stated that 52% of the large owners and 26% of the small owners would be interested in purchasing or leasing from an outside supplier even if the competitor's price was not lower than Bell prices.

The Retail industry was also considered vulnerable. This segment of the market is highly competitive and has always looked for ways to cut costs. The estimate is that "we will lose 80% to 90% of the larger stores, unless we compete favorably on price." The study mentioned above stated that 16% of the Department Stores would be interested in competitive products if the price was the same and 80% would be interested at a reduced price.

With low budgets and large government grants, the Education industry would be attracted by an opportunity to purchase their communications. Since many already have private intercoms and PAX's, it is reasonable to assume that they will be receptive to interconnection. The nation-wide study showed 14% interested at the same price and 54% interested at a reduced price.

The Hospital industry is also cost conscious and, therefore, would be willing to listen to competitive proposals. With a fairly active consultant like David Shaw, we could lose a few hospitals. The study results for this industry showed 57% interested at the same price and 71% interested at a reduced price.

The A.T.&T. report further states that the banking industry will be susceptible in the data area, but that terminal gear for basic service will still be supplied by the Bell System. 46% of the banks would be interested at the same price and 79% would be interested at a reduced price according to the nation-wide study.

These industries are characterized by:

1. A high degree of specialization.
 2. With the exception of banking, they are generally *not* pro-Bell System.
- We must now conduct our own studies rather than depending upon the studies of others.

MARKET COVERAGE

True market coverage must be analysis work with the consultant doing a complete in depth study of the accounts total communications setup. Coverage must not be confused with production work or servicing. Consequently some accounts will require continuous servicing but not essential market coverage.

* * * * *

CHAPTER 3.—COMPETITOR'S THEMSELVES

The character of our future competitors is just starting to evolve. In the past we knew we were vulnerable in the areas of intercom and private mobile radio, but we also knew that this was a small portion of our total business. Today we are just beginning to catch a glimpse of tomorrow's competitor. In many instances, it will be the relatively small intercom firm expanding its operation to include the interconnection of PAX systems to our network, but, because of the revenue associated with communication sales, we will also see many large and aggressive companies entering our market (RCA marketing the Hitachi is our first example). Herein lies the danger! Smaller firms such as Royce Instruments might still be around, but, unless they expand greatly, they will not be our primary sources of concern.

These large firms are already in the communications business so it is not a case of starting from the bottom. With some 2400 independent telephone companies operating in the United States, these companies have had a market for years. Companies such as Stromberg-Carlson, Northern Electric, North Electric, ITT, Norelco, General Electric and General Telephone's supply arm, Automatic Electric, are perfectly capable of competing with us as far as technical ability and equipment is concerned.

These potential vendors, however, do face some problems:

1. What do they do about maintenance? This problem can certainly be overcome, but not in a short span of time.

2. Are they financially ready to mount a major marketing effort? Some are and some are not. We saw an initial hesitancy on the part of the larger firms, but recent rumblings would seem to indicate greater involvement on their part.

3. Do they have an adequate sales force? Most do not. And it is questionable whether most would ever force up to take on the Bell System. Despite our deficiencies, our sales force must be considered a most worthy foe in any competitive battle.

The potential for tremendous competition is already here. Actualizing that potential is another question.

A New York Telephone Company report, published in February, poses an interesting point. "As suppliers of equipment, independent manufacturers would rather expand this function to include the Bell System than reorganize to supply, install and maintain total communications systems." This sounds reasonable since it would take much of the risk out of the venture.

We (S.N.E.T.) seem to be willing to market non-Western Electric equipment (the TE 400 is an example) but there will be many suppliers, each looking for a piece of the market, and we can not accommodate all of them.

Phase II of the FCC investigation will define our relationship to Western Electric. So, while vendors would like to sell to operating companies, and some no doubt will, it seems reasonable to assume that those left on the outside will attempt to develop markets competing with the Bell System.

* * * * *

CHAPTER 5.—LEGAL AND REGULATORY FACTORS

The interconnection tariffs have forced a marketplace orientation. Basically, the FCC is saying that "our" network is a national resource, and we must expand the opportunities to access it. Terminal equipment and even communications systems can now be supplied by private vendors. Since we have

not operated in this current environment, it poses a challenge to our way of doing business.

An A.T.&T. working paper entitled "Marketing in a New Competitive Climate" summarizes the history of anti-trust laws in this country and suggests various restraints on our corporate activity which evolve directly from these laws and from the increasingly stringent interpretation of them as manifested by the 1956 Consent Decree and the Carterphone and MCI decisions.

As a matter of policy, the System has not been willing to test these instruments, out of fear that the sociological climate will force even tighter controls if the subjects are in any way opened. For example, the Consent Decree limits Bell System Companies to the provision of common carrier communications services subject to regulation. Legal interpretation has traditionally placed a "lease only" connotation on the phrase "common carrier communications services," and there are no indications of a change in this opinion. This interpretation places outright sale, with or without maintenance contracts, beyond the scope of our business and suggests that if this new avenue were followed it could cause the Justice Department to reopen the Western Electric divestiture proceedings. Furthermore, the System's 1948-1956 case for retaining ownership of Western rested in part on the theory that Western's prices were indirectly subject to review by national and state regulatory bodies. This might not be true in an outright sale environment, and such a situation therefore might weaken Bell System rationale for retaining a manufacturing capability.

This position is not commensurate with the concerns raised elsewhere in this report, and at a special meeting of the Marketing Committee held earlier this year the following questions were posed:

What constraints are imposed by the Consent Decree?

What constraints are imposed by the Western Electric supply contract?

What are the anti-trust aspects of possibly "unhooking" a sale?

If we cannot follow any or all of these roads as an operating telephone company, could we establish a subsidiary corporation to engage in this endeavor?

Final legal response is incomplete, but at this point it is problematic whether there will be any speedy shift in the System's position. It therefore would seem that S.N.E.T. should attempt clarification through non-Legal channels to "195" or simply make the decision to go-it-alone within bounds of general business prudence as we see it in Connecticut.

Our regulatory climate presents additional challenges. We are operating under rate schedules set by court order rather than by the state Public Utilities Commission. We are surrounded by telephone companies under criticism for service shortcomings. We have been unable to convince the PUC of our current financial needs and of the unsatisfactory rates of return on specific services in which commissioners have expressed interest.

A.T.&T. on the other hand takes the position that our interests would be best served if more power were relegated to the State's PUC's. They claim that issues are more negotiable on a state rather than a federal level. (Issues can be more clearly defined when they are limited to a specific geographical locale.) Our problem has been that we have not been sophisticated enough in our approach. We do not have a handle on profitability so it is difficult to argue each tariff on its own merits. Also, our traditional regulatory relationship fixes our prices as non-responsive to changing market, cost, and other competitive factors.

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EXHIBIT 30.—*Study of A.T. & T. Headquarters Personnel*

STUDY OF A.T. & T. HEADQUARTERS PERSONNEL
BY STANLEY PETERFREUND ASSOCIATES, INC.

1. EPC Authorized Study, Under Joint Sponsorship of Personnel/Information Departments, Of Management and Employee Viewpoints At AT&T Headquarter Locations. Our Report Today Will Be In Four Parts:

We'll briefly review the purposes of the study.

Describe the methods of the study, which we had Stanley Peterfreund Associates carry out.

Describe the management attitudes as they emerged.

And submit for your consideration some action recommendations.

2. Purpose Is To

Determine how people in HQ organizations view the reality of life at AT&T. Assess effectiveness of efforts over past couple of years to improve working conditions.

Identify opportunities to strengthen HQ's operating effectiveness.

Produce guidelines, new objectives and communication/information programs to support them.

3. Study Methods Included

Lengthy individual interviews with 100 E, D and C level managers (half of whom were rotational). Also, 12 AVPs.

Interviewing completed late in 1971.

75 below E level also interviewed as basis for questionnaire study of lower levels, now in process.

Report today will deal only with views of E level and up.

From the outset it became clear that these managers approached the interviews with extreme seriousness, and welcomed the opportunity to state their views. They were concerned. They want to be part of a vital organization that knows, and informs them, where it's going, and they want to contribute more significantly than they feel they are able to under existing conditions.

4. Obviously, The Very Fact We're Meeting Today Reflects The Seriousness Of The Findings.

Although the five-company study two years ago revealed that management in the field views AT&T ("195") as a unified entity, a cohesive corporate headquarters, this study shows that the people who are members of the general departments feel it is anything but.

If an objective in assembling well-paid, experienced, management people at a Headquarters location is to provide vital services and leadership to the rest of the system, the success in achieving this is questioned by those involved.

If our other objectives include the provision of significant, personal developmental experiences to those who come to HQ, or are in the permanent force here, this is happening only randomly, by chance, according to our management people.

If our goal is to operate in a productive, motivational climate at HQ, the perceptions belie this; most feel that they are not making a contribution, most feel that the work itself (and this, remember, is E level through AVP) is not satisfying; and most feel they do not have the needed authorities to do their job.

5. A Variety of Factors Affect These Conditions, Contribute To Low Morale, And Inhibit Performance, As HQ Management Sees It:

Many are upset by the uncertainties which make the Company's goals and objectives appear unclear. They want clearcut sailing orders, or at least some assurance (not presently visible) that top management is working toward resolving the major issues of the business.

viz—Is AT&T to be a total communications service, or a network-focused operation?

Is the advent of competition to be recognized, or are the vestiges of monopoly to be protected at all cost?

Is growth, per se, the objective, are or there liabilities of size that make alternate goals more desirable?

Can NAP work within the present structure of the business? Has the system committed itself to NAP or not?

Are earnings and service still the twin objectives of the system, or (as many believe), has the former finally triumphed over the latter?

Greater exercise of centralized control is strongly favored by the HQ incumbents interviewed. While local autonomy is advocated where "variation is a virtue, or doesn't matter," most feel that the business has changed to the point where the principal problems and markets are now national rather than regional or local, and more of a "Federal System" of operations is required.

Consistent with this, consensus favors a reaffirmation of "195" as a viable, strong corporate headquarters—with a forceful, firm, decisive style of leadership at the top (rather than what is seen as a deliberate, analytic, low pro-

file style currently), and with greater authority (and accountability) vested in each HQ position, at every level.

The present system of rotation of managers is also seen as contributing to the problem. There is an on-loan attitude, with the man's eye and interest focused on his home company, that creates a passing-through climate, a diffidence about the job, and a dissipation of energy on personal career considerations which results in play it safe job comportment, and less effective problem solving. Even some men who come in with the best of intent say they lose their motivation in the present HQ environment.

There is little sense of priority, either in individual jobs or with respect to the organization as a whole. It's unclear (or at least was in late '71) who's responsible for planning, what EPC's role is, or the Company presidents'. The feeling was also strongly expressed that top management too often concerns itself with matters that are not basic; that all managerial levels spend a disproportionate amount of time on minutia rather than fundamental issues.

As a corollary, since no overall battle plan is visible, the view exists that many problems are considered, and decisions are made or programs launched singly, without adequate consideration of their secondary effects or their compatability with other system requirements, programs or decisions. (EEO, NAP, etc.)

People feel insulated in their highly functional departments and assignments. While better communication (which is needed in any instance) might help, the basic solution, some feel, will come only when a problem-solving orientation (both structurally and philosophically) replaces the functional approach and organization.

Finally, there's a viewpoint that AT&T reacts too slowly when change is needed, and too seldom anticipates these needs; that the climate squelches innovation, that "The Good Soldier" is rewarded rather than the risk-taker or innovator, and that in view of the cumulative severity of the system's problems, a sense of urgency is lacking at HQ—too much is done on a "business as usual" basis in what some believe to be a time of crisis.

6. Yet, There Are Brighter Spots, Too:

The Headquarters force wants to help, wants to make a greater contribution than it feels enabled to make currently.

The program of improvement in HQ compensation policies has apparently been working to good effect; pay and benefits are not generally an issue.

The programs underway to improve physical working conditions have provided relief (or at least a promise of improvement), and minimized adverse reaction on this front.

The "Work Itself" program has been well accepted in sections where implementation has begun.

In short, the Headquarters management is ready for change, not resistant to it. They feel intense concern about the system's future; feel AT&T is at a critical juncture, and that in action represents a greater risk than taking bold action.

7. What Action Is Required?

Many steps are being taken that are responsive to findings reported in the study. For instance:

A new indoctrination program is being prepared for managers joining the HQ organization.

A HQ Manpower Inventory is near completion, and a system-wide inventory of management personnel is being developed.

A HQ job evaluation program has been completed and will be reported to the Cabinet on May 13th.

New management development programs for HQ personnel have been launched, i.e.—An overwhelming response to the PACE MBA program. A new course in the Management of Change.

Expanding the Work Itself program to twice as many HQ sections.

Personnel/Controllers working together to alter and liberalize authorities (\$ expense) at every level.

Communicating better (EPC article, TV tape on Competition, announced executive changes internally first, Basking Ridge, etc.).

Attitude survey of HQ personnel below E level under way.

These and other programs require no special authority from EPC. Much can and will be done to respond through normal lines.

On two scores, EPC approval and endorsement is required.

A variety of studies (this one, job evaluation, Operations Department study, etc.) show redundancy, underutilization of personnel. 10-20% reduction seems possible, immediately. Authority is requested to coordinate with all involved to implement action to eliminate redundancy and strengthen job content of remaining positions.

Authority is also requested to phase out the present rotational system and adopt a concept of more permanent assignment to HQ.

Finally, here are some items which the EPC may wish to consider; the decisions with respect to these can come only from the executive level.

Reaffirm and clearly enunciate the role of corporate headquarters as the strong, command center of the Bell System.

Should there be an executive-in-charge of AT&T Headquarters?

Provide clarification, definition, updating of AT&T's (the corporation's) goals and objectives. Issue clear sailing orders where possible; illuminate the issues where uncertainty is still the order of the day.

HEADQUARTERS MANAGEMENT VIEWPOINT

Presentation

Purposes of study.

Study methods.

Emerging attitudes.

Action recommendations.

Purpose

How life at AT&T is really viewed.

Assess efforts to improve.

Identify opportunities to strengthen.

Develop guidelines for action.

Study Itself

By Stanley Peterfreund Associates.

Lengthy individual interviews finished in late 1971.

100 E, D, C, level managers (half rotational).

12 AVPs.

General Findings

AT&T not a unified entity.

Staff questions adequacy of service, leadership to field.

Personal development a matter of chance.

Not contributing, lack of authorities, work not satisfying.

Conditions Affecting Morale, Inhibiting Performance

Uncertainty, objectives not clear.

Insufficient headquarters clout.

Headquarters not seen as strong, viable.

Present rotational system.

Priorities unclear.

Single decisions, out of system context.

Insulation in functional departments, roles.

Slow to change.

Brighter Side of Life

They're anxious to help.

Compensation policies working well.

Physical environment seems under control.

"Work itself" accepted.

They're ready for change, want action.

EXHIBIT 31.—A.T. & T. Steering Committee Report and Recommendations Re
License Contract Study (Excerpts)

(FCC Trial Staff Exhibit 43a.)

STEERING COMMITTEE REPORT, LICENSE CONTRACT STUDY A.T. & T. GENERAL
DEPARTMENTS

March 1973

* * * * *

CONCLUSIONS

Bell Telephone Laboratories

The general impression exists in the Associated Companies and the AT&T General Departments that the Bell Laboratories are not as responsive to the companies needs as they should be and are lacking strict controls and budgetary accountability.

Supporting the latter concern is the contribution BTL expenditures have been making to the total License Contract deficit. During the period of rapid rise in the deficit—1961 (08.8 million) to 1971 (\$46.5 million)—BTL expenses charged to the License Contract increased more than three times (from \$30 million to \$96.8 million). Comparable figures for the AT&T General Departments increased from \$58 million to \$123.2 million, or slightly more than double.

The growth in the deficit paralleled a period of high inflation and one in which there were dynamic changes in the nature of telephony. In the years following 1960 the industry experienced major technological advancements in ESS, TSPS, Satellites, Transistor application and related fields. The result was to advance the funding needs of both the Laboratories and the General Departments beyond revenues produced by the License Contract.

Although the Laboratories charge fewer total dollars to the License Contract than do the General Departments they have a substantially larger overall budget. Their 1971 level of spending was \$505.2 million, an increase of \$201.6 million over 1961. The General Departments total increase during the comparable period was \$81.9 million (from \$64.7 million to \$146.6 million). Because the BTL budgets are affected by many of the same factors that have been under study in the License Contract Review of the General Departments it seems appropriate to extend the study to include them. (See accompanying Charts A, B, C, D)

* * * * *

Contents

[FCC Docket No. 19129, Trial Staff Exhibit No.]

FINAL REPORT AND RECOMMENDATION—MAJOR RECOMMENDATIONS' REFERENCES

- I. Stronger AT&T leadership, direction and control required.
- II. Organizational structure needs to reflect changing needs of the business.
- III. Need to develop more systematic, formal communications.
- IV. Need to strengthen overall corporate management of computer applications.
- V. Need to optimize resources through centralization of certain Operating Telephone Company functions.
- VI. Better use of manpower needed.
- VII. Eliminate duplication of effort.
- VIII. Eliminate unnecessary reports.
- IX. Discontinue certain General Department services.
- X. Establish priorities and provide resources for needed services.
- XI. Adopt improved budget and expense control system.
- XII. Review areas recommended for study.
- XIII. Examine assignment of charges for Bell Laboratories and AT&T services.

Alternatives to Funding "195" and BTL.

EXHIBIT 31a.—*Letter From McKinsey & Co., Inc., to A.T. & T. Re Formal Report for "Meeting the Competitive Challenge in Business Terminal Equipment"*

FCC Docket No. 19129
Trial Staff Exhibit No.—

McKINSEY & Co., Inc.
New York, N.Y., November 1, 1973.

AMERICAN TELEPHONE & TELEGRAPH CO.,
New York, N.Y.

DEAR SIRs: At the March Presidents' Conference, we presented our recommended program to improve the effectiveness of the Bell System's sales forces in the business terminal equipment (BTE) market. With this letter, we are submitting our formal report. *Meeting the Competitive Challenge in Business Terminal Equipment*, spelling out those recommendations in detail.

The proposed program is extensive, reflecting our conviction—and, we believe, yours—that the action required includes not only the sharpening of sales force skills, but also a major reshaping of the way the System views and manages this important part of the business to reflect the changed ground rules and constraints that have accompanied the introduction of competition. Moreover, the program calls for quick, decisive action to ensure that the System starts now to meet not only the challenges of today's marketplace, but also those of the future environment—which are potentially much more demanding.

Notwithstanding the fact the long-term impact of competition on telecommunications subscribers is not yet well understood, regulatory authorities show little inclination to reverse these competitive trends and—in fact—appear more interested in fostering them.

The recent appointment of an AT & T Vice President in charge of spearheading the System's program of change and the obvious support top management has given this appointment in recent announcements and meetings are a very positive sign of your commitment to change. Moreover, there appears to be a real concern throughout the System that significant change to respond to the new environment is long overdue. These concerns are not limited to top management alone. Our work required that we contact scores of 195 and OTC personnel—field and staff people—and the message was frequently the same: "We must get moving in meeting the competitive thrust of today and the future."

The conclusions and recommendations presented in this report are the product of a joint AT&T/McKinsey effort that has spanned the last 11 months. Most of the analysis was carried out in six operating companies and at AT&T headquarters. Two of the study companies were the primary focus of the initial data gathering and analytic effort; the remaining four were used to test the applicability of our conclusions and recommendations. In addition, a number of Bell System employees worked as full-time members of the study team.

The study team conducted an extensive program of data gathering, analysis, and interviews both inside the Bell System and in the marketplace. This program included:

Interviewing over 500 lost customers to determine the reasons they thought AT&T was losing cases to competition.

Analyzing over 4,500 lost customer reports covering the entire Bell System to gain additional insights into possible reasons for lost cases.

Conducting surveys to determine how 700 sales people and managers were spending their time and comparing our findings to knowledge gained from experience in other comparable industrial situations.

Profiling the communications and usage patterns of over 700 customers in 47 industries to pinpoint segments of the market with different needs and potential. The Chesapeake and Potomac and Pacific Companies provided extensive assistance in this data gathering effort.

As the results of this work began to crystallize, they were tested with all levels of management up to and including the AT&T Executive Policy Committee and the top management of the six original study companies. Thus, we feel confident that this report fairly represents the challenge facing the System as a whole.

SUMMARY OF RECOMMENDATIONS

The recommendations contained in this report represent the first step toward ensuring that the Bell System remains as successful in the new environment as it has been in the old one. Specifically, our recommendations cover four broad areas of change.

1. *Providing stronger leadership from 195.*—AT&T management's first priority is to reorganize 195 to provide stronger centralized leadership. This will require the establishment of a new marketing function (i.e., market management), the strengthening of several old ones (e.g., marketing research), and the consolidation of all marketing activities under a senior AT&T executive. With these changes, 195 will be able to develop the competitive marketing skills required to assume a leadership role in developing System strategies and assisting the OTCs in their implementation.

2. *Making the System more responsive to the needs of individual market segments.*—Competition has not chosen to fight the Bell System across the board, but has attacked in market segments where the System appears to be vulnerable and potential profits are high. With the entrance of more and stronger companies into the marketplace, this pattern will persist and become increasingly difficult to deal with. To halt these competitive inroads, the Bell System must develop the capability to determine for itself the unique requirements of individual market segments and gear its entire marketing effort—product line, sales force, and advertising and promotion—to satisfying these requirements. This will require developing product/market strategies that are tailored to the distinct needs of each market segment.

3. *Dramatically upgrading the effectiveness of the sales force.*—Adapting to the new environment will require the Bell System to transform its sales force from a heavily demand-oriented group to a truly professional sales organization. The current sales force—even after making allowances for the need for more flexible pricing and certain gaps in the product line—has had difficulty competing head-to-head with competition. Without question, the quality of competitors' selling efforts will increase as existing competitors gain experience, and larger companies with already well-developed marketing, sales, and service capabilities enter the picture. This underlines the critical importance of beginning now to upgrade the quality of the Bell System's sales force, since experience tells us that such an effort will take several years to bear fruit. The changes we recommend cover all aspects of sales operations—the way the field sales effort should be organized and managed, the way sales people and managers spend their time, and the programs and tools needed to support the sales force.

4. *Evolving and implementing a new BTE strategy.*—The preceding recommendations are aimed at immediate improvements in BTE marketing. These actions—particularly the development of product/market strategies—should lead the System to evolve and implement a comprehensive BTE business strategy. The development of a business strategy is imperative if the System is to be a successful BTE competitor over the long run. First and foremost, AT&T management must decide on the necessary strategic action to make the BTE product line more fully competitive in all market segments. This will probably mean certain departures from traditional policies. Whatever strategic direction is selected, the product line must be kept competitive if the rest of the proposed program of change is to have significant impact.

Management will also need to decide on the basis that will be used to measure performance at all levels of the organization—the total System, individual OTCs, and individual market segments—and set short- and long-term performance objectives. In our judgment, profitability must become the primary performance measure for the BTE business if AT&T is to compete effectively in the new environment.

Finally, organizational changes will eventually be required to upgrade the implementation capability of the OTCs. And over time, new management processes and systems will have to be developed to reflect the new directions being taken.

Taking the foregoing actions may present the Bell System with additional opportunities in the future, particularly as you develop your capabilities to

identify the needs of the competitive marketplace and learn how best to respond to those needs. These opportunities may require additional action by the System. For example, it may become desirable at some point to expand the product line to include a wider range of business terminal equipment. The System may also have to determine whether further changes in the relationship between BTL, WECCO, and AT&T beyond the Denver operation will be necessary to enable BTL to become more responsive to the needs of the marketplace, particularly if the product line is expanded.

The Bell System has entered a period of transition that is likely to be characterized by the problems that normally accompany major change. There is no question that there are risks involved and that the eventual outcome cannot be exactly foreseen at this time. The real danger, however, is not that the System will make some mistakes and pay some penalties as it makes this transition—it is certain to do so if it acts decisively. Rather, the history of American business clearly shows that the greatest danger to a major enterprise confronted with a changing environment is reluctance to adapt.

Experience with similar situations in other major corporations tells us that AT&T top management will have to exert major pressure if real change is going to take place. The changes being recommended are not mechanistic or procedural; they require a significant shift in the attitudes, value systems, management styles, and decision-making techniques of a very large group of people. Overcoming the natural tendency to resist change of this magnitude will require 195 and OTC top management not only to commit to the program and communicate this commitment throughout the organization, but also to become actively involved in implementation.

Successful implementation will require, for example, that top management review and approve implementation plans, participate actively in resolving key product line issues (especially working with regulatory authorities in revising the rate structure), step in to remove inevitable "bottlenecks" during implementation, monitor implementation progress frequently, and begin measuring managers in profit terms as soon as possible. Even with such commitment and involvement, we believe it will take 4 or 5 years of concerted management action before managers at all levels really change the way they go about making decisions and managing the business.

PROPOSED NEXT STEP

You have, of course, already begun moving in the direction of the recommendations presented in this report, and an overall program for implementation is included in Chapter 5. To maintain momentum in the near term, however, we believe an additional step should be taken. The new Vice President, Mr. Whalen, should determine the best way of getting the input and commitment of top AT&T and OTC management to the new program as it evolves. One possible approach would be for him to lead sessions at several Presidents' Conferences over the coming months to present major parts of his program. We expect that the early sessions would be concentrated on product/market strategy and organizational topics and later sessions on sales operations.

The Bell System is currently in one of the most challenging periods in the company's history. As top management has stated many times, the Bell System is strongly committed to ensure that all telecommunications users continue to receive the highest quality service in the world while at the same time modifying your management approach to reflect the differing requirements of the new competitive environment. The success of the company to date, its considerable resources and management talent, and the steps you have already taken suggest that you will successfully meet these challenges. We have enjoyed assisting you in shaping this important program of change and stand ready to provide additional assistance as needed.

Respectfully submitted,

McKINSEY & Co., INC.

Major Recommendation

I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	P & R NO.*
	<u>BELL TELEPHONE LABORATORIES (BTL)</u>		
	<u>RESEARCH AND PATENTS</u>		
BTL	WE and LL contacts are not numerous but adequate; in- fluence research as needed. (Page 6-5)		
BTL	OTC contacts are infrequent; assignment of BTL people to OTC's helps individuals - few, low-level, not influential. (Page 6-5)	Research strategy needs well- defined priorities and objectives. Needs interface points with AT&T to receive direct inputs of AT&T and OTC's needs and problems. St. Cmm. (Page 22)	6
BTL	BTL willing to do anything; AT&T makes no specific requests. (Page 6-5)		7
BTL	Maintaining level force limits flexibility. (Page 6-6) St. Cmm. (Page 23)		8
BTL	Summary: The work is managed. Relevance depends on input. Personnel limitations hamper changing of priorities. (Page 6-6)		9
	<u>Managing the Budget</u>		
BTL	Recent years budgets: Prior year plus inflation. No apparent AT&T influence over plans or results. (Page 6-6)		10

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PROPRIETARY
MATERIAL

*This "Finding and Recommendation Number" appears in margin of Team or
Steering Committee Report

Major Recommendation I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	F & NO.
BTL	Apparent shift from "hard" sciences (e.g., physics, math) to "soft" (e.g., economics, sociology, computer software) requires attention it gets at BTL (Page 6-8).	AT&T should know more about such BTL work (Page 6-14). Watch for erosion of physical science research (Page 6-16). Rv. Tm. (Page 6-14 & 6-16) St. Cmm. (Page 24)	14
BTL	BTL and AT&T and OTC's need more systematic relationship, to communicate current and long-term problems in dynamic world. (Page 6-10)	Participation in work authorization and review process should be enlarged. Rv. Tm. (Page 6-12, 6-15 & 6-16) More systematic and programmed relationship needed. St. Cmm. (Page 22)	16
BTL	Establishing objectives will bring better management control. (Page 6-12)	AT&T has obligation to participate in setting objectives, purposes and periods. Rv. Tm. (Page 6-13, 6-15 & 6-16) AT&T Staff has very limited familiarity with research activity. St. Cmm. (Page 22)	17
BTL	Research would benefit if researchers were more familiar with Bell System. (Page 6-13)	Knowledge of System, mission, priorities and objectives should be communicated to researchers sooner (Page 6-13), systematically and periodically (Page 6-16). Rv. Tm. (Page 6-13 & 6-16) Research people have little familiarity with problems of OTC's (St. Cmm. Page 22). Communicate to researchers sooner. (St. Cmm. Page 26)	18

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Major Recommendation I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	F & R NO.
BTL		Not less funds; but no increases either until rethinking of corp. objectives and research strategy indicates need (Page 6-15). No additional until recommendations implemented (Page 6-16). Rv. Tm. (Page 6-15 & 6-16) St. Cmm. (Page 27)	25
BTL		Assign staff responsibilities at AT&T for same kind of staff knowledge and guidance of basic research that any other activity in the System receives. Rv. Tm. (Page 6-16)	26
BTL		Don't succumb to short-run pressures to spend less money on basic research. Rv. Tm. (Page 6-16)	27
BTL		If more accountable management procedures were introduced, consider whether more might be spent for basic research. Rv. Tm. (Page 6-16)	28
	<u>ELECTRONICS TECHNOLOGY</u>		
BTL	AT&T input and awareness is very little. (Page 6-20)	Need for closer supervision by AT&T. St. Cmm. (Pages 31 & 46)	2

*This "Finding and Recommendation Number" appears in margin of Team or Steering Committee Report.

Major Recommendation I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	F & R NO.*
BTL	WE negotiates their share; apparently AT&T does not. (Page 6-21)		5
	<u>Some Specifics</u>		
BTL	Absence of AT&T guidances permits developing products for which AT&T feels no market. (Page 6-21)		6
BTL	With little interest by AT&T or WE, some seemingly important effort is underfunded and undermanaged. (Page 6-21)		7
BTL	AT&T Engineering is inadequately informed re device technology. (Page 6-25)		11
	St. Comm. (Page 41)		
BTL	Area 20 mgt. concerned lest short term priorities erode already limited research. (Page 6-25)		13
	St. Comm. (Page 47 & 48)		
BTL		Develop two-way information channels between Area 20, AT&T and the OTC's.	18
		Rv. Tm. (Page 6-27) St. Comm. (Page 30)	

*This "Finding and Recommendation Number" appears in margin of Team or
Steering Committee Report

Major Recommendation I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	P & R NO.
	<u>NETWORK PLANNING</u>		
BTL	Inadequate participation by the OTC's in establishing priorities. Insufficient guidance from AT&T. (Page 7-7)	Establish Network Planning Council of AT&T/BTL personnel, OTC advisory group to provide council with OTC requirements. Rv. Tm. (Page 7-7) St. Cmm. (Pages 30, 31, 34 & 56)	1
BTL	Utilization & application (U&A) developments not being standardized for use of all OTC's. (Page 7-9)	Establish procedures to assure that future U&A developments are analyzed by AT&T & BTL for possible standardization & application by other OTC's. Rv. Tm. (Page 7-9) St. Cmm. (Page 48)	7
	<u>OPERATIONS RESEARCH</u>		
BTL	Lack of priorities, Corporate guidance. (Page 7-14)	AT&T set priorities and provide guidance for the Operations Analysis Center. Rv. Tm. (Page 7-14)	1
	<u>CUSTOMER SERVICES</u>		
BTL	Desire to understand System needs in competitive arena. (Page 8-5)	AT&T and OTC provide better market research Rv. Tm. (Page 8-5) St. Cmm. (Page 42)	1

THIS DOCUMENT CONTAINS
PROPRIETARY
MATERIAL

*This "Finding and Recommendation Number" appears in margin of Team or Steering Committee Report.

Major Recommendation I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	F & R NO.
BTL	Technical concerns are communicated well to BTL. (Page 8-5)	Improve marketing, plant, rates, tariff input. Rv. Tm. (Page 8-5) St. Cmm. (Page 42)	2
BTL	Tri-company relationships cumbersome, out of balance; major decisions made elsewhere. (Page 8-7 and 8-12)	Limit CPC membership to three, chaired by AT&T, with authority to make decisions. Rv. Tm. (Page 8-12) AT&T Operating Department membership on councils. St. Cmm. (Page 36)	4
BTL	BTL development effort not changed quickly enough to meet competition. (Page 8-8)	AT&T strengthen leadership role. Rv. Tm. (Page 8-8 & 8-9)	5
BTL	Joint AT&T-WE-BTL decisions too slow. (Page 8-9)	Reduce reaction time by doing tariffing work, training methods and technical practices in parallel with development work. Rv. Tm. (Page 8-10) St. Cmm. (Page 43)	6
BTL	Sense of urgency doesn't carry through entire product line. (Page 8-9)	BTL develop market and research forecasting techniques for company use. Rv. Tm. (Page 8-10) St. Cmm. (Page 43)	7

*This "Finding and Recommendation Number" appears in margin of Team or

Major Recommendation 1 Stronger AT&T Leadership, Direction and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	Page No.
BTL	Improvement needed in conveying marketing, plant, rates, tariffs inputs to BTL. (Page 8-10)	Consider changing charter to establish multi-department interface. Rv. Tm. (Page 8-10)	8
BTL	Utilization and application request could result in undue attention. (Page 8-10)	Use AT&T in participating or advisory role with U&A team. Rv. Tm. (Page 8-11)	10
BTL	BTL moving away from hardware orientation. (Page 8-11)	Emphasize labor-saving devices and methods. Rv. Tm. (Page 8-11) Reexamine present mix between old and new development work. St. Cmm. (Page 38)	11
BTL	Concentrating on products for today's requirements. (Page 8-11)	More exploratory work; make comparative evaluation; relate BTL priorities with System goals. Rv. Tm. (Page 8-11) Reexamine fundamental specific development mix. St. Cmm. (Page 39)	12
BTL	Enough people if redeploy from Picturephone. (Page 8-11)	If not Picturephone, deploy from another BTL area or increase funding and manpower for key telephone development. Rv. Tm. (Page 8-11)	13

*This "Finding and Recommendation Number" appears in margin of Team or Steering Committee Report

Major Recommendation 1 - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	F & R No.
BTL	Researcher has high flexibility to explore alternatives. (Page 8-12)	Develop better timetables, goals; better monitoring by AT&T. Rv. Tm. (Page 8-12) St. Cmm. (Page 30)	14
	<u>TRANSMISSION</u>		
BTL	Addition Coordination of Transmission area activities needed. (Page 9-3)	Strengthen AT&T direction of License Contract work. Rv. Tm. (Page 9-4) St. Cmm. (Page 30 & 31)	1
BTL	AT&T surveillance of general development work inadequate. (Page 9-3)	AT&T should monitor to determine when fundamental development ceases & specific design is authorized. Rv. Tm. (Page 9-4)	2
BTL	Implied - OTC's should provide input to design of new systems. (Page 9-4)	Additional review of plans for proposed centralized maintenance systems with prospective users. Rv. Tm. (Page 9-5)	7
BTL	Addition direction & input from OTC's needed in Loop Transmission area. (Page 9-7)	Consider expanding "Loop Cabinet" to include OTC engineering & operating personnel. Rv. Tm. (Page 9-8)	10
BTL	Implied	Additional effort in development of an end-to-end trunk maintenance system. Rv. Tm. (Page 9-11)	12

*This "Finding and Recommendation Number" appears in margin of Team or Steering Committee Report.

Major Recommendation

I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	P & R NO.
BTL	Implied	Improve procedures for early selection of Trial Company for products.	13
		Rv. Tm. (Page 5-11)	
	<u>SWITCHING SYSTEMS</u>		
BTL		A comprehensive, long range plan to cope with the rapid consumption of central office codes.	1
		Rv. Tm. (Page 10-13)	
BTL		Development of planning methods for phased replacement of Step and X-Bar offices with ESS.	2
		Rv. Tm. (Page 10-13)	
BTL		Exploratory development in automatic additional operator services, such as credit card and coin.	3
		Rv. Tm. (Page 10-13)	
BTL	Case descriptions, particularly those relating to License Contract work, are necessarily broad to give the developer room to explore alternative approaches. But such can make it difficult to control work and evaluate progress, as well as possible duplication between cases. (Page 10-6)	Case work should have clearly delineated objectives and target dates for these objectives, with periodic reviews of what has been accomplished.	6
		Rv. Tm. (Page 10-13)	

*This "Finding and Recommendation Number" appears in margin of Team or Steering Committee Report.

Major Recommendation 1 - Stronger AT&T Leadership, Direction and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	F & R NO.*
ETL	Some improvement in flow of information and in coordination could be accomplished. (Page 10-9)	<ul style="list-style-type: none"> - Enlarge Switching Council membership to include AVP's, Traffic and Plant from General Departments. - Define more clearly the Bell System role of AT&T Engineering in determining where effort should be directed on both exploratory development and specific development cases. - Consider having members of Transmission Council sit in on Switching Council meetings on an ex-officio basis. <p>Rv. Tm. (Page 10-9)</p>	10
ETL	Feedback to companies will sometimes result in recommendations for reconsideration of requests so low on priority list as to practically preclude their ever being worked. Currently there is no alternative action available to company when changes to a standard design are involved. (Page 10-11)	<p>Two alternative approaches for consideration:</p> <ul style="list-style-type: none"> - A service provided by W.E. under Labs direction, much like 53 Account work is handled. - Manpower loans from the interested companies, working under Lab direction on the requested changes. <p>Rv. Tm. (Page 10-11)</p>	13

*This "Finding and Recommendation Number" appears in margin of Team or Steering Committee Report

Major Recommendation I - Stronger AT&T Leadership, Direction
and Control Required

References (Continued)

DEPT.	TEAM FINDING	RECOMMENDATION	F & R No.
BTL	No method apparent for evaluating, comparatively, the top priority projects throughout the various Laboratory Areas. (Page 10-10)	Procedures should be set up for consolidating priority lists established by each Vice Presidential Area. Rv. Tm. (Page 10-10)	11
BTL	On smaller projects, there is definite need for a more direct operating company input that is practical, reliable and quick. (Page 10-10)	A Switching Advisory group should be set up, to meet regularly with Lab and General Dept. representatives and explore potential action items to provide direction for subsequent Lab effort. There should be systematic procedure for furnishing feedback to operating companies on what projects are being worked on and estimates of when they might be completed. Rv. Tm. (Page 10-10) St. Cmm. (Page 30)	12
BTL	Design engineering on older switching equipment has been transferred to W.E. but is still under Labs supervision. (Page 10-11)	More such work should be shifted to W.E. and handled under 53 Account, to free up Lab talent. Rv. Tm. (Page 10-11)	14
BTL	There is increasingly important need for improved documentation on existing systems and for providing complete documentation as part of initial package on future developments. (Page 10-13)	Special emphasis should be placed on documentation for traffic engineering, dial administration and maintenance. Rv. Tm. (Page 10-13)	18

*This "Finding and Recommendation Number" appears in margin of Team or Steering Committee Report

EXHIBIT 32.—*Submitted Statement of Mr. Simon*

STATEMENT OF NORTON SIMON, LOS ANGELES, CALIF.

I appreciate the opportunity to submit testimony to this Committee concerning the proposed restructuring of the telephone industry. My statement comes at this date because, as I considered this issue, I felt an increasing obligation to look further into the facts before testifying. I have reviewed the testimony of other witnesses and have initiated my own independent inquiries to presidents of telephone companies and to various economists.

I have concluded that, while I have no quarrel with the intention of these hearings, it is questionable that the Committee should be focusing as much of its attention at this time on American Telephone and Telegraph, a publicly owned company which by any comparison, has demonstrated reasonably good management practices and creativity. This is not to say that American Telephone could not do more to provide better service. Although I am basically in favor of increased competition, I feel that dissolution or divestiture of the Western Electric subsidiary and/or institution of more competition in this particular industry, even in peripheral equipment areas, would reduce American Telephone's income and adversely affect its ability to raise capital during this critical period. Such action would ultimately mean higher rates and less progressive developments for consumers and would not, therefore, serve the public interest. This also would threaten an important part of the income of over 3 million stockholders as well as pension funds affecting millions of others who depend upon the dividends of American Telephone and Telegraph Company.

In my review of the testimony I was particularly struck by some of Mr. Robert Nathan's remarks. His testimony on page 44 summarizes much of my own viewpoint:

"Certainly any moves toward increased competition must be subject to two conditions. The first is that whatever services may be open to competition, the Bell System and other telephone companies must be allowed to compete freely by adjustment of services or rates, as long as they do not engage in predatory competition or noncompensatory pricing. The second condition is that competition should not be imposed in the regulated telephone system simply for the sake of competition, but only after careful consideration of the effects and side-effects on the regulated system and only after finding that competition will result in a better telecommunications system, not merely a more segmented one."

I feel that there are several vital economic problems which urgently demand the attention of this Committee. In my view the efforts of legislators are being diverted by this inquiry from the more critical task of investigating corporations which are genuinely in need of scrutiny. Certain auto manufacturers, for example, while supposedly operating in an atmosphere of "free competition," have contradicted the basic principle of supply and demand by raising prices during a period of decreasing demand. Surely these current practices, as well as much of its past behavior, give evidence of an industry which functions as a non-restrained oligopoly. As a result, the U.S. has lost much of its share of the international auto market as well as its capacity to contribute creatively toward technological advances. The lack of competition is reflected by increases in foreign manufacturers' sales in the U.S. and abroad in recent years, and by foreign manufacturers outdistancing us in many elements of design, new engine technology and smog control devices.

Another area of great concern is the airlines industry, where the problems are severe and rapidly worsening. Pan Am, for example, hampered by many problems and threatened by possible bankruptcy, may now only be able to survive through subsidy or forced merger with another airline. However, as a result of route and rate structure inequities and other conflicts between regulation and competition, Pan Am may not in the future prove to be the only carrier in such serious circumstances. It is my belief that, generally speaking, regulation and competition create severe operational difficulties and wherever possible should be avoided. While feasible in specific instances, it has become obvious that this is where many of the greatest problems lie.

The railroad industry provides another clear example of certainly a severe conflict between regulation and competition. Here, not only has service broken down, but the industry continues to violate anti-trust laws and the Elkins Act while supposedly functioning under the jurisdiction of the ICC. Conflicts of interest and unseen benefits to shippers exist more frequently than not. The effectiveness of the regulating agency has been subverted by the fact that

it has in many instances become a virtual captive of the so-called competitive industry it is obliged to regulate. Because the industry provides an illusion of competition, the Congress does not insist on as strong a regulation as it would require if the industry were an obvious monopoly. In this respect, the people must be made aware that free competition is costly, impractical and unnecessary in the railroad, airline and telephone systems, and that regulation must be less political and more enlightened.

I am reluctantly coming to the conclusion that, if I were asked to prescribe a workable solution to the problems of the airlines, railroads and telephone companies, I would recommend that they be publicly owned and subject to sophisticated and strong regulation. By publicly owned I do not mean nationalization, but rather a wide distribution of stock in the hands of the public, as exists in the case of American Telephone and Telegraph. In other industries, such as automobile or steel manufacturing, where there is undue concentration of power but where operational dependency on integral national systems does not exist, Congress long ago should have acted to dissolve such concentrations and increase competition in the traditional sense of free enterprise—not for the sake of competitive pricing alone, but also for competitive creativity.

If the manner in which I have presented this summary of my views appears simplistic, I will have succeeded in my intent. I have reached one final conclusion—that if we are going to curb inflation, experts and laymen must learn to communicate better and begin to simplify these economic concepts if the nation as a whole is to reach some common understanding and agreement on how capitalism and free enterprise really can work in a country of 200 million people. Only then can we feel at ease in leaving elaboration to expert economists and implementation to government, business and labor.

There is urgent work for this Committee. I respectfully suggest, however, that this current area of inquiry represents a situation where restructuring could serve to diminish the productivity of an industry. There is the possibility, however remote, that in spite of its better operational history, we could turn American Telephone and Telegraph into a national version of the Consolidated Edison disaster. There are many of us, for example, who remember when Consolidated Edison was a fairly effective utility. I urge this Committee, therefore, to direct these important industrial reorganization efforts toward the several vital industries in need of immediate attention.

EXHIBIT 33.—AT. & T. Document Re Policy Regarding Supplying of Information Needed by Commissions

It has always been the policy of New York Telephone to cooperate fully with the New York Public Service Commission (and the Federal Communications Commission), including the supplying of all information needed by them.

The letter from Chairman Swidler, Attachment 1 hereto, must be read in the context of contemporary events. New York Telephone had just undergone a seven-month strike of its plant employees, which put an extraordinary burden on all management employees simply to continue the Company's telephone service. Many of the Company's staff employees, for instance, were transferred into the field to perform operating functions, and it is generally the Company's staff which provides information to the Commission. The entire period of several previous years was also a time of recovery from service problems, which also occupied the undivided attention of management. It should also be noted that Chairman Swidler's letter cites instances of delay, rather than refusal to supply information,

In any event, Mr. Ellinghaus, President of New York Telephone, promptly re-emphasized to the Company's officers and employees the Company's policy to cooperate fully with the Commission. See Attachment 2 hereto.

STATE OF NEW YORK,
PUBLIC SERVICE COMMISSION,
Albany, April 17, 1972.

MR. WILLIAM ELLINGHAUS,
President, New York Telephone Co.,
New York, N.Y.

DEAR MR. ELLINGHAUS: It has been brought to my attention that our staff is having increasing difficulties in obtaining candid and expeditious responses in its dealings with your company. These difficulties appear to cut across organi-

zational lines, both yours and ours. It further appears that the bottleneck may be related to a relatively new organizational component of your company. As I understand it, your Executive Policy Steering Committee reviews all matters of major concern and impact to the company regardless of whether such matters have any direct bearing on company-regulatory relations. At least to the extent that this committee reviews matters of current concern to our staff, a substantial delay, and to some extent, added resistance and rigidity is being introduced which was not present heretofore. Frankly, the delays and resistance have made it impossible for staff to fulfill several recent directives by the Commission to conduct studies and investigations which the Commission believes necessary to carry out its regulatory obligations. The present situation cannot be tolerated.

I am setting forth below several illustrations of the company's delaying tactics which staff has experienced recently. Each area of difficulty appears to stem directly from your company's new organizational set-up.

On February 17, the Commission directed staff to ascertain the implications of extending Basic Budget Service. Several staff contacts, as recent as April 5, failed to produce the company's "final" position even though company representatives were scheduled to provide Commissioner Jones similar information on March 31.

Several months ago staff initiated an investigation into company implementation of revised tariff rules for credits for service interruptions because the company was delinquent in notifying the public of the change and because of poor performance in giving credit where due. This investigation has lagged because the company has been slow in supplying staff with information. A recent information request for Plant Department training material and performance audits was to be met by March 31. On April 6, company representatives informed staff that the Executive Policy Steering Committee would have to approve release of the requested information and would not be able to meet for that purpose before April 11.

In 1971, during the months of March and June, the Communications Division's staff met with representatives from the Brooklyn and Manhattan territories to review service levels and company programs to improve them.

Some of the items discussed in those meetings were:

1. The status of the construction program and when office relief would be forthcoming.
2. Dial tone speeds.
3. Trouble report rates.
4. Operator answer times.
5. Coin telephone service.
6. PSC complaint procedure within the company.

Both meetings proved to be valuable to the staff and subsequently to the Commission. The staff did not request such meeting during the recent strike in order to avoid diverting your resources from the job of meeting service requirements. Now, I have been informed that a similar meeting was scheduled for March 29, but was canceled by the company on March 28. The staff made further attempts to reschedule this meeting, the latest being April 6, only to be informed that such a meeting had to be approved by Mr. Segall who was leaving town and would not be available until April 11.

On February 9, 1972, an order instituting what I have termed publicly a "historic" investigation into construction policies and practices in Case 25290 was served on your company. The order appears to be quite clear in its intent and, for the most part, the request information should be readily available within the company. Nevertheless, the schedule of the company for supplying information is so extended as to raise the question either of deliberate dilatory tactics or of the small degree of importance that the company attaches to the matter.

Information for my monthly report to the Governor was over a week late last month. It came just as I was preparing to inform the Governor that I would be unable to report on time due to your delay.

Results for quality of service data for 23 cities are normally expected by about the 20th of the month following but January 1972 data has not yet arrived.

Basic Service Index results, originally promised for March 17, were not fully in hand until April 14, even though staff read about the results in company publications dated March 23.

In early January the company was placed on notice, by direction of the Commission, regarding certain staff approval requirements for the extension of Cen-

trex service. Responses to these requirements have been presented with only ordinary speed at best, yet each response has been presented with a plea for immediate action by our staff.

I am deeply troubled by these and other recent instances of resistance and delay which indicate an apparent recent change in attitude toward the Commission and our staff. It is essential to the Commission that a free flow of information to staff (and ultimately the Commission) be maintained. I fully understand the desire of the company's top management to keep its finger on matters in progress between its representatives and our staff. I would be disappointed if top management were not vitally concerned with such matters. However, your company is not measuring up to its own past performance in dealing with staff, nor does it compare favorably with most other telephone, electric, gas and water companies with which we deal.

In view of the serious difficulties which have arisen as a result of the above-mentioned reorganization, I request that you issue prompt instructions, with copy to me, that all company officials and staff groups including the Executive Policy Steering Committee cooperate promptly and fully with the Commission and its staff.

Sincerely,

JOSEPH C. SWIDLER,
Chairman.

ATTACHMENT 2

APRIL 21, 1972.

To all officers:

The Public Service Commission is empowered and obligated to regulate this and other utilities. In fulfilling this responsibility the Commission and its Staff must conduct studies and investigations and obtain information from the Company.

It is essential from a Commission and a Company standpoint that all requests received from the Commission and its Staff be handled in a thorough and expeditious manner. I want to make certain that all Company officials and all staff groups cooperate promptly and fully with the Commission and its Staff. Mr. Flint and Mr. Billingsley are assigned the responsibility to assure that this is accomplished.

If requests are received from the Staff of the Commission which cannot be met or which involve what you believe is undue expense or difficulty, those matters should be taken up promptly with Mr. Flint or Mr. Billingsley and they will discuss them with the appropriate people at the Commission to see if a better solution can be worked out.

I want to add that the Commission has a difficult and often unpopular function to fulfill. I believe that they have been carrying on their functions with a realistic grasp of the requirements in providing service to the public and of the need for strong and effective companies to provide that service.

Will you please send a copy of this letter to all members of your staff who work on Commission matters.

WM. ELLINGHAUS,
President.

**EXHIBIT 34.—Rhode Island PUC Report and Order Re Tariff Filings Made
by N.E.T. & T.**

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS PUBLIC UTILITIES
COMMISSION, PROVIDENCE, RHODE ISLAND

In Re: Tariff Filing Made by the New England Telephone and Telegraph
Company on April 16, 1971—Docket No. 1092

SUPPLEMENTARY REPORT AND ORDER PURSUANT TO DECISION OF THE RHODE ISLAND
SUPREME COURT, DATED MARCH 28, 1973

On April 16, 1971 the New England Telephone and Telegraph Company ("the Company") filed with this Commission a revised telephone tariff designed to add approximately \$14,800,000 to its annual revenue. The proposed tariff was suspended by the Commission while a thorough investigation was made and

extensive public hearings were held on the propriety of the proposed tariff changes. On May 4, 1972 we rendered our report rejecting the Company's request for \$14,800,000 additional annual income but allowing the Company to file a modified rate schedule structured to increase revenues by only approximately \$7,989,000. From this Order both the Consumers' Council and the Company appealed by separate certiorari proceedings in the Rhode Island Supreme Court.

On March 28, 1973 the Supreme Court rendered its opinion by which it directed this Commission to reconsider our earlier Order based upon the prior record together with such further testimony rate relief than it sought, and even assuming we have the power to do so, we have no intention of doing it in this case. This Supplemental Order will, therefore, allow the Company to place in effect its tariffs filed April 16, 1971, but will authorize no additional rate increases beyond that amount. We are satisfied that increased rates in the allowed amount are consistent with Phase III criteria of the Cost of Living Council, if those criteria have any present significance. The effective date of the allowed rates is, of course, postponed by the Phase IV Order to August 12, 1973 and if at or before that date further utility rate freezes are ordered by competent governmental authority the effective date of this Supplemental Order will thereby be further postponed or modified in accordance with such order.

8. Rate structure

The Supreme Court directed that we clarify and expand upon our reasons for finding the Company's "value of service" approach to structuring its tariff "legally unacceptable". Actually, while we have been and continue to be critical of the value of service approach, we recognize that it has been used in this and virtually every other jurisdiction in the construction of telephone tariffs at least for more than four decades. We also are aware that the Public Utility Commissions of other states are following the lead of this Commission in pressing the Bell System to come up with cost procedures so that we might have more tangible facts available to us when considering a telephone rate structure to go along with the hoary but still useful value of service considerations. Under the present state of the art, however, and on this record, we must deal with the proposed tariff on the traditional basis. Witness Stewart provided full justification for it on that basis and there was no contradictory evidence, his evidence being criticized only on the ground that he had not used non-existent cost studies in arriving at his schedule.

While once more, then, we are virtually forced to accept the value of service approach, we again press the Company to exert every reasonable effort to produce more detailed cost information for individual services than it has been able to produce to date. It is important that this Commission, in evaluating any utility's rate structure, have before it every type of pertinent and relevant evidence which can possibly be made available so that we can be certain that the structure is as reasonable and equitable as it can be. The Company will be expected to continue its efforts to develop such costs and to keep the Commission informed of its progress on a periodic basis. If this informal approach does not prove to be satisfactory, the Commission may at a later date consider undertaking a formal investigation on the subject.

ORDER

Accordingly, it is
(3867) ORDERED: (1) That the tariff filing made by New England Telephone and Telegraph Company on April 16, 1971, designed in a manner to provide annual revenues of \$14,800,000 additional to those then being received is hereby allowed, its inception to be as soon as the legal impediments to its effectiveness are removed or expire.

(2) That the portions of Order 8783 entered on May 4, 1972 precluding increases in rates in the Hopkinton and Richmond area and providing a special rate for persons 65 years of age or over be and the same are hereby made inoperative, null, void and of no effect.

(3) That all motions consistent with the findings and conclusions hereinabove stated are hereby granted and all those inconsistent herewith are hereby denied.

Dated and effective at Providence, this 20th day of July, 1973.

ARCHIE SMITH,
Chairman.

JOHN J. WERNER,
Commissioner.

EDWARD W. BURMAN,
Commissioner.

EXHIBIT 35.—*A.T.& T. Letter Re Key Telephone Systems—Modular Panels*

Mr. A. E. SPENCER,
*Director, Customer Switching Laboratory, Bell Telephone Laboratories,
 Denver, Colo.*

DEAR MR. SPENCER: Bell Laboratories estimated prices for modular panels and associated power supplies were covered in Mr. W. J. McKelvey's memorandum of April 12, 1972. Based on these prices, estimates of savings per line for installations of given line sizes were calculated as well as total savings that might result from the implementation of the modular panel program.

Although we have received nothing, normally regarding Western's prices for modular panels and power supplies we have heard that at the present time the price of the line panel (420A) is likely to be as [Indicates a price approximately 40% higher than the Bell Laboratories estimated price.]

Based on this informal pricing information it is requested that immediate steps be taken to verify this pricing information and that the studies of savings to the Bell System be updated to reflect the latest prices. This information is urgently needed to provide economic support with respect to the introduction of modular panels. We would appreciate your furnishing us this information with your development letter covering the modular panel program.

Yours very truly,

C. J. NICKELSEN.

EXHIBIT 36.—*Bell Labs Memo Re Short Range Customer Switching Study Final Report*

BELL LABORATORIES,
April 16, 1971.

TRANSMITTAL OF "SHORT RANGE CUSTOMER
 SWITCHING STUDY FINAL REPORT"—FILE 31005-6Y

Attached is a copy of the report of a joint AT&T-BTL task force organized to meet with selected TELCOs on the subject of customer switching systems. This report contains customer switching system information concerning TELCO operations and procedures, problems facing the TELCOs today, and the TELCOs view of current and future AT&T-BTL plans. The contents of this report are intended to consolidate and reflect what was said at the individual meetings. This report reflects the status of the business as of October, 1970, and the situation in the TELCOs may have changed since.

D. G. PATYK.

VIEW OF PROPOSED PRODUCT LINE

Each TELCO was asked to comment on the AT&T PBX planning letter B, which described the proposed 801A, 805A, 810A, and growable network 800A PBXs, and presented plans for rerating the 701B, 756A, and 757A PBXs A&M-only. The TELCOs felt that it would be a mistake to A&M the 700-series PBXs because the 800-series PBXs were more expensive. Not all TELCOs were completely familiar with the proposed product line and the comments on it were generally sketchy. Having been burned too often, the TELCOs simply do not believe AT&T/BTL price and availability estimates. This credibility gap resulted in little attention being paid to the aforementioned planning letter and therefore a lack of familiarity with the proposed product line.

SUMMARY OF PORTION OF CUSTOMER PRODUCTS COUNCIL MEETING OF JULY 29, 1971

Mr. Kretzmer reviewed the results of comparisons made between Bell data sets and those of our leading competitors. These include ICC Milgo; UBC Rixon; IBM; and Ultronic. Modex and Tuck data sets were also included because they represent unique aspects although they are not strong competitions at this time. The overall comparison showed that competitors have gained advantages in all areas, i.e., cost, size and features. Their aggressiveness in technology, service, marketing, and pricing is surpassing our own current efforts.

EXHIBIT 37.—*Letter from Ben Wiggins Transmitting Materials Re Keeping Telephone Rates in Economic Reach of Individual Users*

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS,
Washington, D.C., July 30, 1974.

Hon. PHILIP A. HART,
Chairman, Senate Subcommittee on Antitrust and Monopoly,
Washington, D.C.

DEAR SENATOR: I have noted with interest and with deep concern that many of the questions which have been discussed in recent hearings before your Committee could have a serious impact on the telephone-using public of this country.

As Chairman of the Georgia Public Service Commission, President of the National Association of Regulatory Utility Commissioners, and a member and former chairman of its Committee on Communications, my primary interest is in keeping local telephone rates within the economic reach of every household in this country.

Consequently, I must view with apprehension the statements of those who, in their zeal for the advocacy of competition, have not considered the ultimate effect of competition in telecommunications upon the average American citizen. For this reason, I would appreciate it very much if you would cause to be inserted in the record of your committee's proceedings the following documents, copies of which are attached.

1. The May 15, 1974 Report of the NARUC Committee on Communications of AN INVESTIGATION INTO THE ECONOMIC AND QUALITY-OF-SERVICE IMPACT ON TELEPHONE SUBSCRIBERS RESULTING FROM THE INTERCONNECTION OF SUBSCRIBER-PROVIDED EQUIPMENT TO THE PUBLIC SWITCHED TELEPHONE NETWORK, AND FROM COMPETITION BY THE SPECIALIZED COMMON CARRIERS IN THE PROVISION OF TELECOMMUNICATION SERVICES.

2. A Bill, S. 3580, the "Home Telephone Act" which was introduced by Senator Magnuson on June 4, 1974, at the request of the National Association of Regulatory Commissioners, and

3. An address entitled, "A Regulator Looks at Interconnection" which I am delivering on Friday, August 2, 1974 at the NARUC Annual Regulatory Studies Program at Michigan State University.

Sincerely,

BEN T. WIGGINS.

Attachments (3).

ATTACHMENT 1

For attachment 1, Report of NARUC, *see* exhibit 9, *supra*.

ATTACHMENT 2

A BILL TO AMEND THE COMMUNICATIONS ACT OF 1934 A PROPOSED
BY SENATOR MAGNUSON

SECTION 1. This Act may be cited as the "Home Telephone Act."

SEC. 2. Section 1 of the Communications Act of 1934, as amended (47 U.S.C., Sec. 151), is hereby further amended by inserting "(a)" after "Sec. 1" and by adding at the end a new subsection to read as follows:

(b) It is hereby declared to be the national communications policy of the Congress that the regulation of interstate and foreign communication by wire or radio should be exercised in such manner as to encouraged, so far as possible the establishment and maintenance of rates for telephone exchange service which are within the economic reach of every household in the United States for the purpose of providing the members thereof with the means of promptly summoning medical assistance and fire and police protection, and participating more fully in the business and social life of their communities. To this end, the Commission shall, through the use of the Federal-State Joint Board prescribed in Section 410(c) of the Act:

(1) Adopt and apply such procedures, formulae or criteria as are appropriate to share the economies of interstate and foreign communication with telephone exchange service users by prescribing rates for interstate and foreign communica-

tion users in using telephone exchange plant to be paid to common carriers furnishing same for the purpose of reducing the cost of providing residential telephone exchange service;

(2) Include in every proposal, policy statement, report or order, which may have a significant impact on increasing the rates for telephone exchange service in the future, a detailed statement of such anticipated impact, and;

(3) Reevaluate within two years from the effective date of this Act, each existing policy statement, report or order, whose continuation may have a significant impact on increasing the rates for telephone exchange service in the future, and prepare thereon a detailed statement of such impact, both present and anticipated.

Nothing in this subsection shall impair or diminish the powers of any State commission.

ADDRESS BY BEN T. WIGGINS NARUC 1974 ANNUAL REGULATORY STUDIES
PROGRAM, EAST LANSING, MICH. AUGUST 2, 1974

I am genuinely pleased and proud to be here with you today. Pleased that our regulatory studies program has been so successful and proud because it was first organized by one of my most valued staff members, Bob Alford, who, alas, retired last month.

Now after nearly two weeks of concentrated lectures and discussions on the techniques of regulation, I'm certain that you're eager to return to your desks, which are undoubtedly piled high with the work your colleagues have left as a kind of homecoming present. I will take but a few moments more of your time.

I trust that this program has been worthwhile and that it has broadened your horizons to some extent. Since there are no formal examinations given here, we must take it on faith that the course has been informative and educational. Our fondest wish is that you are not like the student, who when asked to sign a pledge that there was no cheating, replied: "I didn't get any help from anyone, and the Lord knows I couldn't give any." In today's regulatory climate, we must have informed people or we are in serious trouble.

So today I will not discuss with you the technical side of regulation—you've had enough of that these past days. Instead, I hope to sharpen your perception of a subject of broad public interest—the subject of competition in the regulated telecommunications industry.

Given the existing structure of the telecommunications industry—and I emphasize the word existing—a natural monopoly operating under pervasive government surveillance—regulators at the State level can help assure the adequacy of convenient and economical communications service by shaping regulatory processes that are relevant both to the needs of the public and the requirements of the industry.

There are those who would say that the industry should no longer exist solely as a natural monopoly, but rather should be opened to competition. Competition after all, they would argue, is the backbone of the free enterprise system.

I can hardly question the truth of that statement—nor will I. Competition is indeed "the American way," so to speak. But when dealing with public utilities, there emerges another term of equal importance—public interest. Public utilities are firms vested with a public interest and are, in all respects, creatures of the public they serve. Although they enjoy a captive market, they are also captives of that market. They may serve no other, nor may they abandon their service obligation even though faced with financial ruin.

Consequently, we should not view the industry as the enemy and ourselves as knights in shining armor sworn to protect the fragile virginity of that most capricious of maidens, the general public.

We interpret our charge as deriving from the sometimes unpopular responsibility we share with the industries we regulate: Namely, to maintain the health of those industries that form the basic infrastructure of the national economy. We must somehow balance the public interest which we interpret to be good service at reasonable cost with the financial well-being of the enterprise, which must be interpreted to mean a fair return to the investors supplying the capital. I submit that it is entirely consistent with the public interest that we so interpret our duty.

I do not know, however, how we state regulators will be able to safeguard the public's interest in the availability of high-quality communications service at reasonable cost in the brave new world of competition that is foreshadowed by several regulatory decisions that have been made over the past few years by the Federal Communications Commission.

To put it bluntly, it is my belief that those decisions could very well erode the ability of the telecommunications industry to perform its basic function as the leading edge of economic progress.

I do not suggest that it was or is the intent of the people who framed those decisions to sabotage the communications industry. But I foresee that to be precisely the result of regulatory trends—initiated on the mere assertion of the benefits of laissez faire economics in an abstract, sterile way—that would force competition in an industry where experience as well as theory teach us that competition cannot be trusted to do the job of regulation in promoting and protecting the public interest.

Some proponents of competition would have you believe that what I and my colleagues on the NARUC Committee on communications have been saying is the reaction of hysterical conservatives anxious to protect their piece of the action. It is nothing of the sort. It is the product of exhaustive studies on the part of state regulatory commissions and the NARUC—studies of the impact of competition on the quality and cost of communications service in the United States.

I realize that the position we have adopted on this issue—the cause we pursue, in other words—is highly suspect. It is not an easy task convincing people that monopolies, regulatory commissions and rate increases are good for them, but it is one I cannot in good conscience shirk.

What, then, is at stake if competition is allowed to proliferate in the telecommunications industry? Simply answered, the entire structure of the industry—and the concepts that have made its development possible—would be radically altered.

These concepts, as I envision them, are three: The concept of a natural monopoly, regulated by public commissions at all levels of operation; the concept of universal service; and the concept of value of service pricing and nationwide and statewide averaging. A brief examination of each might be helpful.

In 1848 John Stuart Mill developed the principle of natural monopoly when he observed that gas and water service in London could be supplied at lower cost if the duplication of facilities by competitive firms were avoided. It took no great stretch of imagination to extend that philosophy to any enterprise engaged in the provision of essential public services.

Assuredly, however, some safeguard was needed to prevent the potential for abuse of power inherent in all monopolies, even those most natural and most benignly motivated. Thus, in 1877, the United States Supreme Court determined that States had the right to regulate prices charged by businesses "affected with a public interest." In 1910, the Mann-Elkins Act delegated to the Interstate Commerce Commission board regulatory powers over the interstate and foreign telephone, telegraph and cable services.

Regulation of telecommunications came full bloom in 1934 with the passage by Congress of the Communications Act. It called for the creation of a seven-member commission "for the purpose of regulating interstate and foreign commerce in communications by wire and radio so as to make available, so far as possible, to all people of the United States a rapid, efficient nationwide and worldwide wire and radio communications service with adequate facilities at reasonable cost." Congress specified, however, that "nothing in this act shall be construed to apply or give the Commission jurisdiction with respect to charges, classifications, practices, service, facilities or regulations for or in connection with *intrastate* communications. . . ."

The key words in the communications act, it seems to me, are "Service Available To All At Reasonable Cost." This has been construed by those charged with providing the service and those responsible for regulating its provision as meaning universal service. The current level of communications development in this country is proof that the system works.

To achieve universal service it was both a social as well as an economic imperative to set a threshold price that would put the service within reach of the great majority of Americans. Thus, with regulatory approval, the concept of "Value of Service" was applied to the establishment of rates for basic exchange service, while nationwide and statewide rate-averaging was used to calculate charges for long-distance or toll calls.

In essence, value of service pricing held that service was inherently more valuable to the urban dweller than to the rural customer because the urban dweller could reach more people in his local calling area. Similarly, the business customer derives more value from his service than the residence customer because he uses it more and because it influences the profitability of his enterprise.

On toll calls, it was decided that mileage rather than destination would be the prime determinant of prices. Rates were averaged by distance, thus avoiding the sort of geographical discrimination that could have developed had prices been keyed exclusively to the cost of providing service in various parts of the country.

The concepts I have just discussed have allowed the country's more than 1,700 common carriers to build and maintain the best communications system in the world.

Why, then, is a system that has worked so well now being so sorely challenged?

I submit that only people sitting in Washington, D.C., can give you answers to that and other questions.

I submit, too, that the answers they might give you probably would be insufficiently grounded either in fact or experience.

And I submit further that if their answers were to go to the point that they are simply trying to open the telecommunications industry to fair and healthy competition, then only by yoga-like exercises in double-think can recent pronouncements by the FCC staff on competition in the private line market be construed as being even minimally consistent with the tenets of free enterprise economics.

Competition is not new to telecommunications. It was tried in the early part of this century and it has been essayed more recently in Europe. In neither case has it worked.

In point of fact, the telecommunications industry in the United States is the model—in terms of structure and performance—that other nations increasingly attempt to emulate.

Despite the impressive record of achievement of the telecommunications industry, a number of regulatory decisions have been made on the Federal level that disregard the proven benefits of regulated monopoly in favor of experiments in competition. Let me focus on two areas in which competition is being promoted, neither of which in my opinion serves the public interest.

Within the last five years, the FCC has opened the way for customers to furnish their own equipment. The kind of equipment I am referring to is mainly switchboards, telephones with buttons and lamps and automatic answering devices. Under current tariffs, protective devices or "interfaces" are required to prevent customer-provided equipment from causing service problems for other customers.

Further, I have seen no evidence that those who would supply customer-owned equipment have seriously addressed these public interest questions, but instead would use the regulatory process only to further their own interests.

A recent and blatant example of this is quoted in the July 23, 1974 order (decision No. 83162) of the California Public Utilities Commission, which stated that an intervening interconnect supplier advocated an increase of about 50% in the Pacific Telephone Company's rates for key telephone sets, recognizing (and I quote from the order—page 91) "that such an increase would be intolerable for many businesses and suggests that the increase be made in two steps, one half the first year and one half the following year."

The order further states (page 92) that this interconnect supplier, "in its brief actually asserts that based upon its witnesses' testimony (such) revenues should be increased over \$110 million . . ." and that this supplier "would have us order Pacific to make incredibly complex studies taking years to complete, yet at the same time would have us raise rates . . . based on the testimony of one telephone installer. This we will not do."

It is interesting to note, too, that the California Commission, in its finding No. 20 stated:

"The total cost of providing a basic exchange telephone, including the costs of local usage, averages \$15 a telephone a month. The total revenue received from an average residence telephone, including revenues from toll and MMU service, is \$8.03 in the case of lifeline service and \$15.69 for flat rate residence service."

And in finding No. 21:

"Each basic exchange service is being provided substantially below cost, and will continue to be at the rates authorized by this decision."

This being so, how can it be in the public interest to permit unregulated firms to provide the more profitable items of equipment which play such a large part in keeping basic rates at the lowest reasonable level?

The second area of the telecommunications industry in which the Federal Communications Commission has mandated competition is in the provision by specialized common carriers of private line services—private lines along interstate routes that are already adequately served by common carriers.

First, the question of connecting customer-provided equipment to the telecommunications network. You are undoubtedly familiar with the term "certification."

Certification is a process whereby a presumably independent organization would evaluate the technical characteristics and performance of communications equipment manufactured by non-common carriers and, based on its evaluation, determine whether the equipment should be certified for direct electrical connection to the network without the protective connecting device that is now required.

There would appear to be nothing wrong with that. But there is.

The nationwide telecommunications network consists of billions of individual parts, any two pieces of which must be required to work together. It is the basic "inter-connectedness" of the network that makes it logically a single entity. The more you split the responsibility for designing and manufacturing and installing and maintaining "pieces" of the network, the more you increase the risk that the performance of the network will succumb to the tyranny of numbers. My colleagues in engineering would describe this perhaps irreversible process as "rampart entropy."

In their zeal to enhance widespread customer ownership of telephone terminal equipment, those who are promoting competition have failed to look to the future. They have failed to recognize that all telephone equipment, no matter how well made, must ultimately wear out. And no unregulated supplier or independent servicing company is obliged to stay in business. Indeed, many have already failed and left their customers high and dry. More certainly will.

Who, then, assumes the obligation of providing the service lawfully required of the regulated telephone companies? I suggest that you ask yourselves this question. So far, I have not heard one answer from anyone that coincides with the public interest.

One now expects the telephone industry to be responsible for completing every call made. But if the industry cannot control the instruments needed to make the call, how can any reasonable man hold them responsible for ensuring that the instruments indeed work. And if they are not responsible who is?

Let me turn now to the effect on common carriers and telephone customers of competition in the intercity private line field.

As you know, private line service provides a customer with a communications channel for continuous and exclusive use between two or more locations. The FCC has granted the specialized carriers an open-ended license to pick and choose those routes they elect to serve. The common carriers, on the other hand, serve all routes, however profitable or marginally profitable they might be. Not unnaturally, the specialized carriers are providing service along routes where profits are high and costs low.

On other routes, where there are few customers and relatively low volumes of communications traffic, the costs usually are higher. Again not unnaturally, the specialized carriers have little interest except on the high-volume, low-cost routes where they can underprice existing common carriers.

On the other routes, where there are few customers and relatively low volumes of communications traffic, the costs usually are higher. Again not unnaturally, the specialized carriers have little interest in serving the low-volume high-cost routes. They concentrate instead on the high-volume, low-cost routes where they can underprice existing common carriers.

To the extent that the specialized carriers attract customers who would normally use regular long distance service, the telephone companies stand to lose revenues and the majority of their customers stand to pay more for service.

Today, the average revenue from an interstate call is approximately \$2.00. Of that amount, more than 50 cents goes to cover the costs of the local telephone facilities used to complete the call. Therefore, for every interstate call lost to competition, the local telephone company would lose the 50-odd cents and that money would have to be recouped elsewhere, probably by increasing the price of basic telephone service.

So there you have it in a nutshell. The revenues common carriers lose to the sort of competition I have been discussing will cause a shift in revenue requirements from interstate to intrastate operations. The expenses avoided as customers are lost will not be commensurate with the revenue that would otherwise have accrued to the common carriers.

"So what?" one might ask. The telephone companies are well established now and can stand a little competition.

But that is not the point. In an environment of Government-sponsored competition, it is almost axiomatic to say that for every winner there must be a loser. In this case, I fear the losers will be the rate-paying public and the smaller common carriers.

The smaller common carriers might be content to allow the Bell System and the larger independents to carry the load of convincing the public that competition is not in its best interest. But a corporation the size of AT&T, however just its cause, does not easily overcome the suspicion that what motivates its concern is not so much the public interest as its private purse.—It is sad but true that the public is unlikely to accept the negative statements on competition issued by a natural monopoly whose net income last year rounded to three billion dollars.

If the smaller telephone companies think that they will not be affected by competition, they are wrong. Indeed, I would say that theirs is a vulnerability greater than the Bell System's or General Telephone's.

The assault on telephone revenues is a pincer movement. In small towns where perhaps only one large industry provides a major source of telephone revenue, a competitor sooner or later will appear to make that small telephone company's best customer the proverbial offer he will not be able to refuse. The competitor does not have the responsibility to the general public that the common carrier has. If he is successful in his sale, the phone company's revenues go down only to be made up by the general rate payer. The alternative for the independent is to fold up shop.

And as more customer-provided terminal gear is attached to the telephone system—within the small independent's area—the sharper his loss of contribution to the cost of providing basic service, and the greater the need to make up that loss by increasing basic rates.

You will forgive me an awkward turn of phrase, but despite the long litany of concerns I have recited here today and elsewhere—perhaps, in some small way, because of it—I see light at the end of the tunnel.

First, you may recall reading that the public hearings on these issues that the common carriers and several state regulatory commissions have been seeking will be held. With the establishment of FCC Docket 20003, I hope that a careful determination will be made of the economic and social impact on the average telephone customer of competition in the telecommunications industry. I fear, though, that unless both Federal *and* State regulators are appointed to a joint board to study the program, the docket's number might well correspond to the year in which the issue finally is resolved.

Perhaps more importantly, in mid-May a Federal court—In a matter different only in degree from the issues I have discussed today—ruled that it was, and I quote, "all too embarrassingly clear that the commission" (namely the FCC) "has been thinking of competition, not in terms primarily as to its benefit to the public, but specifically with the objective of equalizing competition among competitors." The court further said that the FCC "has done little more than assume competition is likely to be advantageous. The 'evidence' that is proffered by the commission to support this assumption is not conclusive or even relevant."

Despite this, consider the recommendation of the FCC trial staff on July 18 regarding the revised private line rate structure put into effect by AT&T to compete with specialized carriers prompts me to ask one question: What exactly is the FCC promoting on behalf of the public interest?

If one considers the establishment of a cost-based rate structure a viable response to competitive inroads made by specialized carriers, how then must one view the pronouncement by the FCC staff that those rates should not be allowed and any competitive response by the common carrier must follow FCC guidelines? I submit that this is illogical and totally inconsistent with prior claims that common carriers would be permitted to compete fully and fairly. I would ask you to consider the premise that this form of contrived or Government-sponsored competition is what the FCC has been aiming at from the beginning—an arbitrary allocation of the market without due examination of the benefits to the public such a policy purportedly would have.

If you will bear with me one short moment longer, I would like to summarize my position, both as chairman of the Georgia Public Service Commission and as president of the National Association of Regulatory Utility Commissioners.

First, I am not saying that there is absolutely no room for competition in the telecommunications industry, but I am saying that the consequences of competition should be known to the public and weighed carefully by all of us in regulation.

Second, competition and regulation generally do not mix. They do not in trans-president of the National Association of Regulatory Utility Commissioners.

Third, the policy decisions promoting competition do not have the support of all regulators. Many State commissions have followed the lead of the North Carolina and Nebraska Commissions in challenging certain decisions made at the Federal level as preempting the prerogatives of the States.

It is on the State level that the true impact of competition will be felt if for no other reason than that more than 90 percent of telephone calls made in the United States each day take place wholly within the individual State.

Fourth, the establishment of FCC Docket 20003 is only a first step. What is needed is the appointment of a joint board of Federal and State regulators to investigate the issues and to make a decision that will be viable over the long term. When the issues are well defined and have been exhaustively discussed, only then can the public interest be determined.

Exhibit 38.—Statement of Computer Industry Association

STATEMENT OF THE COMPUTER INDUSTRY ASSOCIATION BY
A. G. W. BIDDLE, EXECUTIVE DIRECTOR

The Computer Industry Association appreciates the opportunity to submit comments to the Subcommittee as to the interaction between computers and communications and the problems facing our Nation as a result of this interaction.

The Computer Industry Association represents thirty-eight member companies with combined revenues in excess of \$1.5 billion dollars annually and employing more than 40,000 persons. Our member firms range in size from under a million dollars in annual sales to something in excess of \$200 million. Their products cover the full spectrum of goods and services associated with computers and data processing—mainframes, memories, tape drives, disc drives, printers, data entry devices, terminals, software, and services such as leasing and systems consulting.

The Association was formed two years ago this month. Its objective then and now is to endeavor to bring about free and open competition within the computer and data processing industry—an industry that has, since its inception, been dominated and controlled by one company.

In a sense, the Association was born out of frustration. Its founders had come to realize that no matter how superior their technology, or how good their product, their existence as viable companies is at the sufferance of the industry giant. They realized that efforts to build an enterprise on industry, skill, and foresight could be thwarted by the mere announcement of a planned new product; or by the change of a hardware or software interface; or by some other change in the rules of the game—and that they could do little or nothing about it.

Their frustrations ran even deeper. They had lived through one federal antimonopoly suit against the giant, only to see it result in a consent decree that did little to reduce the defendant's market share or power. Although another suit was filed on the last day of the Johnson administration, for more than three years nothing had happened to bring it to trial.

Out of this frustration came a plea—a plea that is gaining support across the breadth of America. Are we going to allow, as a conscious decision of public policy, an ever increasing concentration of economic, market and political power among fewer and fewer large institutions, or are we as a nation going to return to the philosophy of free enterprise and pluralism? If the answer is a reasoned decision that monopoly is the wave of the future, we only ask that the rules of the game be made clear. Only then can our member chief executives make those decisions that serve the interests of their customers, employees and shareholders.

If on the other hand, we as a nation believe in the benefits of competition and the products of a free enterprise system, then we must take steps to make that system work. The legislative mandate must be clarified and the enforcement

machinery modernized and streamlined. The rules of the game must be set out for all to understand. The entrepreneur must be able, once again, to succeed, or fail on his own merits. He should not be kept in business thru the regulatory process if his activity is not providing economic benefit—nor should he be put out of business by a monopolist when his existence benefits the consumer and the nation.

We believe that free and open competition between *near equals* is good for producers, consumers and our nation. That others share this belief is borne out, in part, by the fact that our membership has increased by a factor of five since we last appeared before this committee one year ago.

At that time we considered one giant—IBM—to be enough. Since then we have found that the survival of an independent computer and data processing equipment industry is subject to not just one, but two monopolies—IBM and AT&T. It is the latter that we would like to address today.

The key points that we would like to make are as follows :

1. Computers and communications are becoming increasingly interdependent.
2. The efficient utilization of computers requires access to the switched telephone network.
3. Competition with AT&T from independent companies in the specialized common carrier, data modem, and terminal fields is in the national interest.
4. AT&T is using its political, economic and market power to block the development of legitimate competition.
5. Cross-subsidized competition from Western Electric, the manufacturing arm of AT&T, threatens the existence of a substantial segment of the computer industry.
6. Whereas a natural monopoly may have existed in the communications field at one time, competitive markets are now feasible, and it is not in the public interest to permit a continuation of monopoly in this vital field.
7. The vertical and horizontal integration that has been permitted to take place in the communications industry (in spite of the antitrust laws) is counter to the public interest.
8. Legislation should be enacted to restructure the telephone industry so as to separate local telephone service monopolies from long line common carriers, and equipment and supply producing companies.
9. The Federal Communications Commission should be divided into two commissions—one with responsibility for radio and television (The Federal Broadcast Commission), and the other with responsibility for telephone and related communications.

The reasoning underlying these conclusions follows.

Computers and Communications

During the 1950's and 1960's, the computer was enshrined in a well lighted air-conditioned cocoon (the data processing center), where it was protected from dust particles and people. Data was carried to it for processing by hand, in push-carts, and by truck. The answers that the computer printed out were in turn distributed back to the originator for action. Although this approach made the most efficient use of the computer's processing capabilities, it inevitably caused delays and increased waste of human resources.

Advances in technology (semiconductors, rotating memories and other devices) have tended to lower the cost per unit of computing power while inflation and other factors have raised the cost of human labor and the economic value of the data itself.

In part because of these shifts in economics, in part because of the increased experience and sophistication of the user, we are witnessing a revolution in the use of computers. In many cases information is input to the computer by the person who first captures or originates the data—wherever he or she may be located. Some or all of the information contained in the computer's memory can be almost instantly transmitted to another computer in another city, or to a terminal half-way around the world. As each day goes by, we see more and more cases where ordinary people work intimately with a computer—a computer they may never see. It's happening in grocery stores, banks, service stations and hamburger stands, as well as in high schools and colleges, law and medical offices, and factories.

Much of this improvement in the use and effectiveness of computers has been made possible because of the capability of our national telephone network to provide interconnection between virtually any two points in the United States. The sophistication and efficiency of airline reservations systems, credit card sys-

tems, bank clearings and Wall Street transactions would not be possible were it not for the ability to quickly transmit data over the telephone system.

This dependence will increase substantially during the remainder of the seventies. Some forecasters are already predicting a "computer terminal in every home"—a device that could access sophisticated computers and permit the user to do everything from balancing his checkbook, to purchasing supplies and services. The realization of these predictions obviously depends upon free access to the telecommunications network.

The number of data terminals interconnected to computers has been increasing at a rate of more than 30% per year since 1970. This rather phenomenal growth rate is expected to further accelerate during the 1975-1980 time span.

Obviously, growth of this magnitude has attracted a lot of interest—literally dozens of new companies have come into being; each endeavoring to satisfy the user's needs as he perceives them; each seeking to exploit new technologies. The entrepreneur with the right combination of foresight, skill and capital has prospered, while those lacking these qualities have failed. The user has benefited from lower prices, better products and a wide choice among suppliers.

The development of competition and the realization of its inherent benefits has not been limited just to data terminals. A similar pattern to that described above has also developed in the design, manufacture and marketing of data modems¹, and the provision of intermediate and long distance transmission of data by the Specialized Common Carriers.

Competition In A Monopoly Environment

Exploitation of the combined capabilities of the computer and our nation's communications network has blossomed since the now famous *Carterphone* decision. Prior to that time, interconnection with the telephone system was virtually impossible.

Prior to the *Carterphone* decision the telephone industry had done little if anything to improve the system's ability to handle computer data; modems were relatively slow and quite expensive and transmission costs were high.

The FCC apparently recognized the failure of the Common Carriers to keep abreast of the requirements of the marketplace, and held fast to the pro-competitive intent of the *Carterphone* decision. This was further reinforced by the *Specialized Common Carrier* decision that allowed the entry of companies, like MCI and Datran, who were willing and able to develop and provided computer oriented data transmission capabilities, and low cost private line services.

These moves all served to benefit the user of computers through improved products and services and lower costs. Perhaps of greater long term significance, they served to awaken the sleeping giant—AT&T.

AT&T has responded with a vengeance to the development of competition. Its Chairman, John D. deButts has publicly stated that they will use all of their available resources to resist further erosion of AT&T's end-to-end service responsibility. Clearly, his edict is being implemented throughout the Bell System. For example:

- AT&T and its operating companies have launched massive media advertising campaigns which question the integrity, competence and viability of those companies offering equipment or services in competition with the Bell System.
- The mandatory use of an interconnect device for all "foreign attachments" (which is rented from Bell by the user), gives Western Electric a service and cost advantage over non-Bell competitors.
- When a competitor has identified a prospective customer requirement and then contacts the appropriate Bell operating company to coordinate installation, the Bell marketing force is immediately informed and sent out to "save the account."
- Various retaliatory measures have been taken to put economic pressure on customers who have selected competitive equipment or services in preference to AT&T offerings.
- The viability of competitors is being threatened by ensnaring them in time-consuming and costly hearings before the FCC as well as in litigation. Not only does this pit the almost unlimited legal resources of AT&T against the smaller company, but it effectively restricts the ability of the smaller company's management to manage day to day operations, thus stifling its growth.

¹ A modem is the device that converts a digital signal from a computer to an analog signal that can be carried over the telephone network, or vice versa.

—By seeking to induce the individual states to overturn the *Carterphone* decision, AT&T forces its smaller competitors to retain counsel and seek certificates of public convenience and necessity in many separate jurisdictions. The costs involved are prohibitive for the small company and thus serves to erect one additional barrier to entry.

A formidable competitor

Needless to say, AT&T is, by any standard of comparison, a very formidable competitor. AT&T, with revenues of more than \$24 billion dollars, is one of the largest companies in the world, while its manufacturing subsidiary, Western Electric, consistently ranks among *Fortune's* top 10 industrials. The Bell System accounts for some 90% of all long distance services in the U.S. Western Electric, with revenues of almost \$7 billion, accounts for more than 80% of the domestic telephone equipment market.

The combined economic and political power of AT&T is probably second to none in America today. Although an admittedly biased work, "Monopoly", by Joseph C. Goulden, amply documents how ineffectual the Congress and the FCC have been in their efforts to regulate and control this, the largest of all monopolies. If AT&T can persistently act against the clear intent of FCC orders, as it has in interconnect situations; and can delay the implementation of rulings made in the public interest through protracted litigation and appeal—how can a competitor even hope to have a chance to succeed in any contest with this well established monopoly?

Vertical integration

Given the utility—supplier tie-in that exists between the Bell System operating companies and Western Electric, opportunities and incentives for market entry are severely limited. Under present conditions, a new supplier is forced to approach Western Electric (which performs the purchasing/technical approval activity for most of the operating companies) with hat in hand in order to sell to the Bell operating companies. Western is then in the position to balance its interests (and AT&T's) against those of outside suppliers. Decisions involving billions of dollars are made in a forum that is inherently laden with conflict of interest and largely beyond scrutiny by the Federal or State regulators responsible for protecting the public interest.

A case in point

To illustrate the dangers of the existing vertical relationship between an unregulated supply company and a regulated utility, it is informative to examine recent developments in the computer terminal field.

The forerunner to the sophisticated computer terminal we know today was "the printing telegraph machine", first introduced in 1849, and used to transmit messages between New York and Philadelphia. The first commercial sale of the Teletype machine was made in 1910. Until 1931, this equipment was used exclusively on private-line service.

In 1931, Western Electric, having joined the Bell System the previous year, purchased all rights to the Teletype machine from its inventor, Otto Klein-schmidt, for \$38 million.

From 1931 until 1965 the Teletype machine remained basically the same, with minor innovations in transmission speed and cosmetic improvements. The first major innovation in teletype equipment took place in 1965, when the Baudot code (developed in 1876 by an officer of the French Telegraph Service) was replaced by the American Standard Code for Information Interchange (ASCII). The new code allowed an expanded character set (128 as opposed to 64 for the Baudot code), including an expanded set of control characters that increases the utility of the code. At the same time, speeds increased from 60 to 100 w.p.m.

Clearly, AT&T, with a captive market for its teletype and no meaningful competition, had little incentive to effect significant product improvements over a period of more than thirty years.

In the late 1950's, the computer industry was experiencing its first period of rapid growth. Industry research and development was primarily devoted to main-frame and peripheral equipment innovation, with only limited resources available for the development of remote processing (terminal) equipment. As a result, users who needed this capability turned to Teletype for their low speed, unsophisticated remote processing requirements.

An industry is born

In the late 1960's the computer industry recognized that Teletype equipment simply could not effectively fulfill the requirements of the modern data processing function. A sub-industry, the terminal and low-speed printer segment, was born. It rapidly proliferated with many companies, both established and new, entering the field. They offered a variety of more effective high speed terminals to replace the out-dated Teletype equipment. Speeds of 300 words per minute to more than 1,500 words per minute became commonplace.

Computer applications that had not previously been feasible proliferated, costs dropped and user choice increased significantly, *and the sleeping giant awoke.*

AT&T responds

In late 1972, Teletype announced its new Dataspeed 40—a sophisticated 1,200 words per minute terminal designed for, as AT&T coined it, "Computerations". A far cry from the Teletype machine, The Dataspeed 40 provides a key board, a CRT display monitor, a medium speed 300 line per minute printer, memory options, and a variety of other features to facilitate its use as a computer terminal. All at a price substantially below any comparable devices in the marketplace or even on the drawing boards.

The members of the computer terminal and printer industry immediately saw a major threat to their survival. They asked, "how is this price possible?". They were utilizing the glass envelopes for their CRT displays that were being produced by the millions for the television industry. AT&T had developed and were using their own in limited quantities.

The independent producers were using semiconductors and IC's (integrated circuits), that were off the shelf low cost computer components, AT&T had developed and was producing their own in limited quantities. Assembly labor was not a significant cost item to either AT&T or to the independents. If material and labor costs were comparable, how then, could AT&T offer the device at less than one-half the price of even the largest producer in our industry—IBM?

We do not see answers to these questions in any economies of scale inherent to the Teletype subsidiary of Western Electric—a wholly owned subsidiary of AT&T. We can see answers in the ties and opportunities for cross-subsidization that exist between the utility and its supplier.

For example:

- Teletype, with a massive captive market within the Bell System companies, can commit to production quantities and invest in tooling with full knowledge that its huge customer base is insulated from effective competition. After all, its parent, Western Electric, approves *and* purchases the operating equipment utilized within the Bell System. It is in their self-interest to "standardize" on products of their own manufacture.
- The independent terminal manufacturer must invest huge sums of money in the recruiting, training and support of an effective field service organization. Teletype has no comparable expense since its products are maintained by telephone operating company employees. The expense of hiring, training and supporting this service organization is borne largely by the telephone rate payer—not by the user of the Teletype terminal.
- The independent terminal producer must include the expense of marketing his product in the price he charges. Insofar as Teletype's own bookkeeping is concerned, it can sell literally thousands of terminals to the Bell operating companies with little or no sales effort or expense.
- AT&T's insulation from real world competitive pressures permits them to write off their investment in R & D, tooling, and equipment at totally unrealistic rates. The pace of technology in electronics and computers, and now in terminals, is moving rapidly. We suspect, although to our knowledge no information exists outside AT&T's files to confirm it, that the depreciation schedules used by AT&T for its Dataspeed 40 program are wholly unrealistic except within the context of a supplier that has absolute control over its customer's access to equipment utilizing advanced technology.

Needless to say, we—and our member companies—are concerned with the ability of AT&T Teletype to lock out competition by a combination of purchasing policy and unrealistic pricing *and* in the process, threaten the existence of one of the few—if not the only—highly competitive segments of the overall computer industry.

AT&T as an OEM competitor

Our industry has been forced into an unwilling acceptance of the barriers to entry that exist in the telecommunications marketplace because of Bell's monopoly of both supply and service.

We find it even less easy to accept that AT&T, operating from a protected monopoly position, can enter the computer market place and sell its products with impunity. As noted earlier, Teletype benefits from numerous advantages over competitors that stem directly from its relationship with the Bell System. These advantages include a large protected market, access to the R & D capabilities of Bell Labs and Western Electric, a "free" nationwide sales and service organization and access to capital on the most favorable terms in America today.

As a consequence, their recent decision to market the Dataspeed 40, in whole or in part, to entities outside of the Bell System threatens the existence of the established manufacturers of terminals, low and medium speed printers and information display devices. This threat does not emanate from just another company that has simply built a better product: but, we believe, from the ability of America's largest protected monopoly to use the telephone rate payer to subsidize his product, both directly and indirectly.

By way of illustration, we were recently told that a Teletype vice-president has said "If that (expletive deleted) C.I.A. (Computer Industry Association), doesn't stop complaining, AT&T will get mad and spin Teletype off." When informed of this, the Chief Executives of even our smallest member companies responded that they would welcome an opportunity to compete on such a basis. Teletype, as a separate corporation:

- would have access to capital at interest rates commensurate with *its own* business prospects.
- would not have a guaranteed captive market of literally thousands of machines.
- would be able to draw on the technical resources of Bell Labs only on the same terms and conditions as other suppliers to the nation's telephone systems.
- would have to price its products to recover a fair return.
- would have to make business decisions and to writeoff its investments in the light of a truly competitive marketplace, and
- would have to recruit, train and support a field service organization and marketing organization just like any other "real world" company.

In our view, and that of our member companies, this is what competition is all about.

AT&T's monopoly position is no longer justified

Technology has come a long way since bare copper wire was strung on crude poles beside a railroad track. Long lines communications has been supplanted and enhanced by microwave transmission, satellite systems and other techniques. The original premise underlying the grant of monopoly control over 80% or more of our nation's telephone service is no longer valid.

The state of the art in telephones, modems, terminals, PBX's, and other elements of the overall communications system has advanced rapidly—perhaps far more rapidly than AT&T and its auditors care to admit. Developments in the electronics and computer industries have clearly demonstrated that others, beside Western Electric, can design and build useful, reliable, and cost effective devices to enhance our national communications capacity.

AT&T continues to insist otherwise. Public statements imply that the nation is overrun with individuals and companies, who in their hunger for profits, are perfectly capable of destroying the nation's telephone system. AT&T, rather than cooperatively developing interface standards and the other operating rules required to bring about a functional multivendor system, raises the spector of a telephone repairman in some remote part of America being electrocuted because a non-Bell computer terminal was attached to the telephone network in Miami—or that some telephone subscriber, perhaps, in Bell's characterization, a low-income member of minority group, will be unable to summon needed medical assistance, as a result of a motel installing a purchased PBX from Stromberg Carlson rather than renting from Ma Bell.

AT&T may not yet be capable of admitting it, but there are companies capable of offering superior products—and there are customers who wish to acquire them. Furthermore, the needs of the marketplace can be satisfied at a substantial sav-

ings, without jeopardizing our national communications network, through the workings of our traditional free enterprise system.

Close examination will, we believe, demonstrate that a so called *natural monopoly* exists in only one area—the local area switched network. Competition is feasible and, we believe, in the national interest in all other areas: including the provision of terminal equipment, long lines transmission of voice and data, and the supply of switchgear, wire, cable and supplies.

Were the true facts available, we suspect that they would prove that the public is paying a far higher price than necessary for its telephone service. For this reason, we believe that the horizontal and vertical integration that now exists in our nation's telecommunications industry is no longer justified or appropriate.

Several alternative solutions appear possible

Although the FCC is showing increased concern about both the economics of and the quality of service in the telephone industry, the consensus appears to be that the heart of the problem is beyond their reach. Using the holding company device, AT&T has effectively placed the vertical relationship between the regulated operating companies and the unregulated supply company beyond the scope of effective FCC authority.

Therefore, it would appear that a resolution of the problem lies with the Congress. As we see it, there are at least three possible approaches to the problem.

1. The Congress could amend the charter of the FCC, clearly mandating the Commission to require open competitive bidding in the purchase of all equipment and supplies used by the regulated common carriers.

Similar competitive bidding requirements exist in other regulated industries—e.g. interstate freight transportation and railroads. The most recent and directly related instance is in the Communications Satellite Act which requires free and open competitive bidding on all significant procurements.

This approach has certain drawbacks, as pointed out by Judge Pence in his decision in the ITT-GT & E case. Factors pointed out by Judge Pence included: adherence to system standards; long established personal and corporate relationships; the economies of scale inherent in always having had the business; and other equally effective barriers to entry of new suppliers. For this reason the judge ordered a complete horizontal and vertical restructuring, in order to ensure restoration of competition.

2. The Congress could increase the resources available to the Antitrust Division of the Department of Justice so that they could bring cases of this size and complexity to trial on behalf of the public. It is unlikely that we will see effective application of our nation's antitrust laws to many major concentrated industries as long as corporate defendants still can amass legal staffs 10 and 20 times the size of the trial staff seeking to protect the public interest.

As it now stands, AT&T could bury the Antitrust Division under lawyers—just as IBM is now doing in their antitrust case.

A similar situation also exists within the FCC. The resources of the Commission in the current Phase II rate proceeding are woefully inadequate by comparison to those of AT&T. As a consequence, they are overly dependent upon AT&T for the necessary economic studies, cost data and factual information. Combine this with the cloak of secrecy that is being maintained over the evidentiary material that is crucial to a valid determination of facts and issues and it is little wonder that America is losing faith in its judicial system and its regulatory agencies.

3. The third, and we believe feasible and more effective, solution to the problem of unwarranted monopoly of telecommunications service and supply would be to amend 15 U.S.C. § 79 the Public Utility Holding Companies Act, to include telephone holding companies.

If we were to follow the approaches of that Act in the telecommunications industry, we would create locally owned and operated telephone company switching systems; connected by several competitive "long-lines" or intercity transmission systems; supplied by independent, competitive equipment companies.

This approach might need extension to deal with further division of Western Electric Co.—as, for example, by the spin-off of Teletype—to create relatively balanced, unconcentrated competition in telephone equipment supply markets.

Many of the findings of the Congress that led to the enactment of this important legislation in 1935 are equally applicable to the telephone industry today:

- the claimed economies of scale are in many cases illusory;
- the ingredients of a natural monopoly no longer exist; and
- the public is paying an excessive price relative to the value received.

The history of our nation's gas and electric utilities amply illustrates that the consumer has benefitted from the elimination of service and supply tying arrangements and the restoration of competition. The same would be true in the case of the telephone industry.

The FCC's role

Our Association has only recently become directly involved with the telecommunications industry and the Federal Communications Commission. We have been forced into involvement by the growing interdependence of computers and communications.

To date, we have been favorably impressed with the people with whom we have worked at the FCC—they seem to be dedicated to the public interest and to be earnestly striving to insure that the nation receives the economic and service benefits that stem from valid competitive activity.

However, as laymen and citizens we have been shocked to find the relative imbalance in emphasis between regulation of the radio and television industry versus regulation of the telecommunications industry.

Should the Congress, as we hope it will, mandate a restructuring of this industry, much of the burden now on the FCC would be eliminated. However, much would still need to be done to insure the maintenance of a sound and responsive telephone system: equipment certification requirements and procedures would be needed; interstate tariffs would have to be approved and monitored and steps taken to help insure the competitive development of the newly restructured market.

For this reason, it would seem desirable to separate the FCC into two commissions—much as the FCC was at one time separated out from the ICC. The new "Federal Communications Commission" would have overall responsibility for the growth and development of our nation's communications system, while the newly created "Federal Broadcasting Commission" would assume responsibility for regulation of the Radio and Television Broadcasting industries.

This separation would permit the appointment of Commissioners with the necessary background and experience in their respective areas of responsibility. It would allow equal emphasis on these two very important fields and would, over time, allow the development of the expertise required to "regulate in the public interest". Today, it is too easy to question who is the regulator and who is the regulated.

We appreciate this opportunity to provide your Committee with our thoughts on this important subject. The marriage between computers and communications is only in its first years. Together, they can bring untold benefits to our economy and to our citizenry. Increasingly compact and powerful computing capacity, packaged for a wide variety of uses, working with multiplied communications channels now technically available, can afford another order-of-magnitude step forward in realizing our peoples' constant ambition to bring the world to everyman's doorstep.

However, to realize these benefits we must be free to exploit new technologies and to capitalize upon the innovations inherent in the free enterprise system. Today two giants guard the gates to this land of opportunity—AT&T and IBM. The Congress will ultimately have to decide the fate of both: and in the process Congress will affirm or deny whether competition and pluralism are the wave of the future in America, or whether we will entrust more and more of our nation's economic and political power to fewer and fewer decision makers.

Thank you.

EXHIBIT 39.—*A.T. & T. Letter Re Number of PBX's in Service*

AMERICAN TELEPHONE AND TELEGRAPH CO.,
Washington, D.C., July 8, 1974.

HON GERALD HELLERMAN,
*Special Financial Adviser, Senate Subcommittee on Antitrust and Monopoly
Legislation, Washington, D.C.*

DEAR MR. HELLERMAN: In response to your request of June 26, 1974, the number of 770 PBX's in service by Southern Bell on April 1974 was 823.

Very truly yours,

DOUGLAS MCFADDEN,
Executive Assistant and Attorney.

APPENDIX

LETTERS AND STATEMENTS SUBSEQUENTLY RECEIVED FOR THE RECORD

HOUSE OF REPRESENTATIVES,
THE STATE OF COLORADO,
Denver, June 12, 1974.

Mr. GERALD HELLERMAN,
*Special Financial Adviser, United States Senate,
Committee on the Judiciary,
Subcommittee on Antitrust and Monopoly,
Washington, D.C.*

DEAR MR. HELLERMAN: I would like to submit the following statement in connection with my efforts in the field of communications and the efforts of the Mountain Bell lobbyists as concerned with the State of Colorado.

I have a bachelors degree in physics (Colorado College 1951) and have completed some 20 hours of graduate work at the University of Colorado in telecommunications and acoustics during the past three years. I am a registered professional engineer.

I believe a very brief review of communications in the State of Colorado would be in order so that the committee can better relate to the total situation.

Mountain Bell now bills the State of Colorado over \$6,000,000 per year. During recent years there has been about an annual 10% increase, and if the Colorado PUC grants the increase now requested by Mountain Bell, the amount will be nearly 20% for this one year.

Communications, other than "land line" in Colorado grew from the needs of the Highway Patrol and the Department of Highways. During WW-II I first worked with the Highway Patrol as a technician. At this time the patrol was dispatched through local police or in a few cases through their own equipment. The Highway Patrol expanded through the years and in 1956 established a state wide micro-wave system that permitted central dispatching and truly gave the patrol a system that would work when "land lines" were out of service. The highway department also used the system for internal control. Other departments began to use the system such as revenue, fish and game, etc. The system also carries crime computer data now.

It became apparent to the legislature in 1968 that there should be a "Division of Communications" and this should be separated from the highway department and be a part of administration. Then it could be used by all state agencies. This statute was enacted during my second term in the legislature. The new division had great difficulty in getting underway, the biggest reason was the reluctance of the highway patrol to give up their control. A second and equally large factor was that all departments would have to order their telephone equipment through this new division. However, it was a statute and by great effort it was made effective 18 months after it was passed. There was a great effort to reduce the power of this new division during the "short session" after the law was passed but this effort failed. It also became apparent at that time that the new division of communications would like to expand the micro-wave system and to consider the use of other than Bell equipment for various state agencies.

Starting with my third term I could see the need of expansion of the micro-wave system, not only for law enforcement, but also for educational TV, i.e. to bring the professors to the teachers and students in remote parts of the state. I had been aware of Bell's lobbying efforts during my first four years and had paid little attention to them. Mountain Bell at that time had two full time lobbyists who were always present at the Capital and always present at any lunch or party. Since I had owned a radio station for 17 years and had Muzak for 10 years, I had more than my share of problems with Bell. I

had only crossed the path of Bell Lobbyists once during that first four years when Representative Braden and I released a public statement that showed Bell's lack of preparedness for an emergency that arose affecting our two districts. At that time Representative Braden told me, after the release, that he sure caught hell from the Bell boys.

In spite of all this, Bell always invited me to their annual summer party at the Imperial Hotel in Cripple Creek, Colorado for the melodrama. Bell would hire a bus, invite all the legislators and their wives plus the Bell lobbyists and managers from the local offices for this day. The bus would leave Colorado Springs around 4:30 PM and return after the melodrama. Since I had expressed strong feelings about the phone company, I never accepted. The past year I was not invited. I would estimate that it cost about \$40.00 per person, depending upon how much they would drink. No other utility in Colorado has ever done anything like this during my term.

As noted above I was now much involved in expanding the state micro-wave system. During my fifth year I was able to get this funded in the Republican house caucus, and just barely, and then I lost the expanded system in the Senate. I now realized it was the Bell lobbyists who stopped the expansion. I did get a \$25,000 study and this was so controlled by Bell that it was ineffective.

During my seventh year, and from this study, Senator Less Fowler and I introduced a bill for 2.1 million dollars that would expand the system and include ETV to the front range of the state. This bill barely got out of the Senate education committee because of the Bell lobbyists and did not have one vote in the Senate Finance Committee. The argument was, "this would be against private enterprise".

I was able to get an ETV study, but only after I promised not to permit the study to in any way investigate telephone type communications. The final results of this study were to use Mountain Bell micro-wave for an interconnect system between the major campuses on the front range (University of Colorado at Boulder, Denver Medical, Denver Center, Colorado Springs, University of Northern Colorado, Colorado State University, and Southern Colorado State College). The committee voted for this in spite of the fact that several of the Universities had testified they were not ready to use such service. I did not introduce the bill because I could not support such a bill with the facts presented. The Bell charges would have been slightly over a quarter million per year with a five year minimum and limited strictly to ETV with no other use. The state system that was proposed to the same committee at the same time would have been built just to the needs of this time and expanded as the other Universities had the requirement. At the same time, the state system would have had several subcarriers for educational computer use, stereo transmission of musical programs, etc. The cost for the first three years was nearly the same for either Bell or the state system. After three years the state's system was much less expensive. Incidentally, this was the first time we had even gotten a firm price from Mountain Bell in four years of asking.

Three other items should be of interest to the committee.

Two years ago, because of a ruling by the Colorado Public Utilities Commission, it was necessary to pass a special statute to permit the phone company to give their employees special rates. It should be noted that *at the time of introduction*, there were enough co-sponsors in both House and Senate to

easily pass the bill. The courts of Colorado were authorized to put in a computer system to keep track of dockets, jurors, etc. This involved a number of Colorado communities. With the statute on the books and Bell in full knowledge of the division of communications the entire network was setup without the division being consulted.

During the past short session, a suggestion was made that each member of the legislature have a phone at his desk. This was to be discussed at a Republican caucus. No effort was made to contact the division of communications and no effort was made, until I interceded to have bids from Bell competitors. The Bell lobbyists held a breakfast for members on the morning of the caucus. During the caucus, after the competitors had spoken, the Bell lobbyists simply said, "whatever you want, you can have". And that was Bells statement.

No matter what legislation, from land use to noise abatement, the effect and the presence of the Bell lobbyists is always there. Colorado's Sunshine law requires all lobbyists to register and while there are usually only two full time Bell lobbyists, the records indicate there are seven.

If I can be of further service to the committee I would be most pleased to be of such service.

Sincerely yours,

C. M. EDMONDS.

SUBMITTED STATEMENT ON BEHALF OF DATA TRANSMISSION CO. ON S. 1167,
THE INDUSTRIAL REORGANIZATION ACT

Data Transmission Company (DATRAN) is privileged to submit a statement to this Senate Subcommittee regarding S. 1167, the Industrial Reorganization Act.

The hearings held to date on S. 1167 have been a source of encouragement to DATRAN as it has sought to establish itself as a participant in the Nation's telecommunications industry. Whether or not DATRAN ever firmly achieves such status may well depend upon the measures taken by this Subcommittee with regard to S. 1167 or other similar legislation which may be introduced in Congress.

While it might appear callous or even perverse to so state, DATRAN has realized a certain degree of satisfaction in learning of the other small entities which have been confronted, as it has, with Bell System policies and practices designed to preserve and maintain Bell's virtual monopoly grasp upon the domestic telecommunications industry. Such satisfaction emanates from a realization that DATRAN does not stand alone in its attempt to make available superior communications services to the American public. Heretofore, DATRAN was comforted by its knowledge that it could provide such superior communications services if it were provided a reasonable opportunity to compete against an overwhelming economic power. Now it is comforted additionally by the fact that there exists a great number of small entities who likewise believe that, if they are provided an opportunity to compete against an organization capable of crushing competition from any source, the American public will be better served.

DATRAN was organized in 1968 specifically to provide communications services to data processing entities and organizations whose computing needs

were becoming increasingly reliant upon communications channels and facilities. Existing channels and facilities offered by established communications common carriers had been designed to satisfy voice, rather than data, needs and were basically incompatible with the emerging data transmission needs of modern business. The inherent physical shortcomings of existing communications channels and facilities were compounded further by established carrier rates and practices designed for voice communications. These rates and practices, when structured into tariffs having the force and effect of law, were wholly inadequate to satisfy the needs of the data processors. In terms of both cost and efficiency, therefore, there existed a widening void between the needs of data processors and the availability of communications services.

In November 1969, DATRAN filed a series of applications with the Federal Communications Commission (Commission) for authorization to construct a nationwide network of microwave radio facilities designed to provide digital transmission services to data processing entities and organizations. Essentially, the proposed facilities would permit data processors to link their digital computing networks to compatible communications facilities to achieve cost and performance levels that could not be realized over the existing voice network. As DATRAN's proposed services were intended specifically to satisfy data processing needs, DATRAN's applications for authorization promised tariff rates and classifications fully responsive to the unique requirements of data processors.

DATRAN's applications subsequently were granted by the Commission which accorded DATRAN recognition as a "special" common carrier by virtue of the unique "digital" nature of its proposed service offerings. The Commission noted that DATRAN's proposed network was "markedly different" from those proposed by other so-called specialized common carriers. DATRAN "alone" had proposed a switched, all digital exclusively for data transmission. See *Specialized Common Carrier Services*, 29 F.C.C. 2d 870, at 907, 924 (1971). Significantly, Commission authorizations were premised upon a finding that DATRAN proposed services were premised upon a finding that DATRAN proposed services would further the public interest, convenience and necessity.

DATRAN presently is providing digital services between Houston and St. Louis. A further link (to Chicago) is expected to become operational in September, 1974. To date, DATRAN has invested more than \$60 million in seeking to reduce to reality its objective of satisfying unmet user needs. Substantial amounts of additional capital will be necessary in order to fulfill this objective.

A NEED FOR CONGRESSIONAL ACTION

In view of affirmative, indeed vehement, Bell Systems efforts to impede the introduction of innovative DATRAN services, this Subcommittee should have cause to reflect seriously upon whether the National interest in efficient communications would be served best were the Congress, by statute, to define or limit specifically the parameters of Bell System participation in domestic telecommunications. The Commission, an arm of the Congress, has sought to establish certain broad parameters in this regard, but it has been unable to restrain Bell System forces otherwise committed to a contrary course.

For example, the Commission, having concluded that the public interest lay in the fostering and maintenance of a competitive environment within which so-called private line services might be offered, and having reaffirmed consistently such conclusion, is obliged to deal with a recalcitrant organization unable and unwilling to accept the Commission's definition of the public interest. Accordingly, Bell has arrogated to itself the determination of what befits the public interest and unilaterally has concluded that such interest lies in the monopoly provision of *all* domestic communications services. Clearly, Bell has so confused the public interest with its own corporate interest that it is unable to distinguish between the two.

To date, DATRAN, a budding new company with hardly any revenue income, necessarily has expended in excess of \$2 million merely to establish and maintain its legal right to provide unique communications services and, further, to defend the Commission's public interest finding that DATRAN should be afforded the opportunity to provide such services against relentless Bell attacks. Unlike Bell, DATRAN does not offer, nor does it intend to offer, "monopoly" communications services and, therefore, DATRAN cannot pass

these costs along to ratepayers, an overwhelming number of which, in Bell's case, are captives of its monopoly services.

This Subcommittee must realize that DATRAN's *raison d'être* arose, in the first instance, from the unwillingness and inability of Bell to serve a significant and growing segment of the communications market—data processors—with communications services designed to meet their particular needs. It must further be recognized, as a matter of logic, that no individual and no organization would dare to “take on” Bell were there lacking persuasive reasons for so doing. By mere attrition, Bell can wear down opponents and force them into oblivion without there resulting even a trace of impact upon Bell's financial position. DATRAN submits, and various records of Commission proceedings demonstrate conclusively, that DATRAN's attempted entry into the communications marketplace in 1968 was not only justified but, indeed, was welcomed. There was no basis to conclude at that time that proposed DATRAN offerings were not complementary to public needs, and that such factor would not obtain measurable benefits for the public.

All this has been altered, however, to the extent that Bell, with some success, has undertaken a comprehensive and co-ordinated “public relations” program designed to convince the general public that DATRAN is committed, in the name of corporate profit, to undermine the National telecommunications network. As OTP Director Whitehead has indicated before this Subcommittee, Bell is gambling its stature in seeking to destroy competition and would-be competitors in the private line market, in which Bell revenues, it is significant, constituted a mere 4.7 percent of its total revenues of \$21.4 billion in 1972. To accomplish its objective, Bell has manufactured a digest of arguments, most of which are based upon the manipulation of theory, statistics, and other data in Bell's exclusive possession. It has painted DATRAN, among others, as “entrepreneurs,” the connotation of which leaves little doubt as to suggested ill-motives. Yet, it is “entrepreneurs” like DATRAN, which historically have brought innovative communications services to users neglected by Bell's lack of entrepreneurial fervor.

It is alleged that DATRAN, among others, is “cream skimming” in terms of the nature and location of markets DATRAN proposes to serve. Yet, these same markets were virtually ignored by Bell five years ago.

Aspersions are cast upon the technical capabilities of DATRAN, among others, and it is alleged that “harm” will befall the National telecommunications network if facility interconnections are tolerated. Yet, Bell has been unable to provide any persuasive element of proof to support such allegations despite repeated invitations by the Commission to do so. Moreover, Bell has never explained satisfactorily the absence of such “harm” despite extensive interconnection with independent telephone companies, Western Union, RCA Global, Western Union International, ITT WorldCom, Bell Canada, the Mexican Telephone Company, and farmers co-operatives. Further, in respect of technical capabilities, Bell should be reminded, if only to avoid future repetition, of the unprecedented service breakdowns that plagued the metropolitan New York City area in the late 1960's, and presently are impacting the Houston, Texas service area. Finally, Bell is reminded that DATRAN has been granted two significant U.S. patents covering the digital system it has designed and presently is putting in place.

Bell consistently has cast specialized common carriers, including DATRAN, into the “villain's role” through allegations that effective competition within the private line market will lead to, and ultimately result in, higher rates for consumers of residential telephone service. Bell has publicized *ad nauseam* that “the benefits competition will bring to a few will be achieved at a cost to many.” DATRAN submits that such allegations must fail for lack of proof and, further, that these indeed must fail because there is persuasive evidence that private line competition will achieve the opposite result: a lowering of the cost of telephone service to residential consumers. The most recent study prepared by Bell respecting its rate of return by service offering indicates that interstate private line telephone grade services produce a rate of return on investment of 4.5 percent. The rate of return for Telpak, a discriminatory bulk discount private line offering introduced by Bell some 15 years ago, is only 4.9 percent. On the other hand, the rate of return for MTS, Bell's major interstate monopoly service, is 8.2 percent. In effect, Bell's MTS service is

utilized to bring the *overall* interstate rate of return *up* to 7.7 percent. Clearly, were Bell to eliminate its burdensome private line offerings, lower MTS rates could, in the long run, be achieved. Further, common Bell plant and facilities dedicated to both private line and MTS service could be dedicated exclusively to MTS which continues to grow at a rapid pace. Thus, increasingly costly Bell construction programs which result in higher charges to users of monopoly services could be curtailed.

Bell's specious contention that competition in the private line market will be detrimental to the residential consumer of telephone service clearly is intended to marshall the force and effect of public opinion against DATRAN and other specialized common carriers. It is significant to note in this regard that the burden of financial risk in a competitive market properly should be borne by a competing company's shareholders and *not* its customers. To the extent that Bell might experience a diminution in revenue growth due to the success of specialized common carriers, such diminution properly should be reflected in Bell profits and, accordingly, in dividend payments passed to its shareholders. There is simply no basis to contend that profit levels must be maintained or furthered by offsetting any reduction in private line revenues with increased prices to Bell's captive users of its monopoly services.

Bell's stepped-up anti-competitive behavior in recent years is neither surprising nor lacking in precedent. Even a cursory examination of the history of the Bell System reveals a penchant toward conduct inimical to the prevailing economic philosophy in the United States.

A CENTURY OF MONOPOLY

The early years

In 1979, we shall witness the 100th anniversary of the Bell System telecommunications monopoly in the United States. In reviewing developments during the past century, it is altogether appropriate and, indeed, enlightening to reflect upon how this monopoly was founded and nurtured and how, in fact, it was neither "natural" nor based upon the laws of economics.

Essential to any understanding of the development of the Bell System during its infant years is the 1938 prepared by the Federal Communications Commission staff and Commissioner Walker, often referred to as the "Walker Report."¹ Such Report is significant not only by virtue of what it poses but, also, by virtue of the fact that the motives of those who authored it are beyond question or challenge.

The Walker Report noted that the early years of the Bell System were comprised of a series of distinct periods. During one of the earliest of these periods, there was no competition in telecommunications because the Bell System maintained exclusive patents on telephone and related equipment. This was a period marked with few benefits to consumers, as Bell served only urban areas, charged high prices, and made little effort to encourage the growth of the telephone system.

In 1893, a large number of competitors entered the telecommunications field. And, while Bell would contend that this period of competition was detrimental to the development of domestic communications, the Walker Report perceived the situation quite differently:

"The most important effects of the period of free competition in the telephone field during the period 1894-1913, were the following: expansion and popularization of telephone use; improvement in technical developments; stimulation of long-distance telephony; inauguration of rural service; reduction in rates; and duplication of facilities." (Walker Report, at 147).

Clearly, this period of free competition did not have, as Bell consistently maintains, a deleterious effect on the development of telecommunications. Indeed, Commission statistics demonstrate that this period of free competition was characterized by large-scale growth in the telephone industry, the expansion by independents into rural areas of the Nation, and by rapid innovation—all, characteristics *not* typical of the industry during the period of Bell System patent controls.

The period of free competition in the telephone industry did not long endure as Bell early concluded that competition was inimical to its corporate interests, both long and short-term. Its initial "competitive response" was to

¹ The full title of this report is "Proposed Report on the Telephone Industry."

generate rapid development so as to extend its grasp, as quickly as possible, into new markets and thereby blunt the sword of competition. The Commission noted that:

"The Bell System resorted to a variety of practices to supplement its policy of expansion in meeting the competition of the independents during the period 1894-1906, inclusive. These were: 1. an active propaganda campaign against independents; 2. refusal to connect with certain independent companies or classes of companies; 3. refusal to sell telephone instruments to non-Bell companies or on the open market; and 4. attempts to control independent manufacturers of telephone apparatus and equipment." (Walker Report, at 152).

It is indeed remarkable that Bell's turn-of-the-century "game plan" remains operational in 1974 in its current attempt to derive an identical competitive result.

After 1907, the policy of the Bell System was modified to curtail internal growth and expansion. Emphasis instead was shifted toward an aggressive absorption of independent telephone companies. One of the methods utilized by the Bell System to accomplish this end was to cause its financial backers to flex their considerable muscle to prevent larger independent telephone companies from obtaining financing necessary to achieve needed expansion. As the Walker Report stated:

"The method was more effective by bringing financial pressure to bear through the Maker-Morgan group controlling the Bell System, upon other financial organizations and institutions to which appeals were made by various independent organizations for adequate financing. The result was that large sources of investment capital in this country were made unavailable to independents. The larger the independents became, the more impossible it was for them to obtain capital in the large amounts required. *This slow financial strangulation of attempts to develop large competing independent systems was an important factor in retaining for the Bell System its former position of monopoly in the telephone field.*" Walker Report, at 155. (Emphasis added.)

This Bell System practice was effective as statistics demonstrate. In 1907, independents provided one-half million more telephone stations than did the Bell System. By 1912, a scant five years later, the Bell System was providing 1.5 million more stations than were independents. (Census of Electrical Industries—Telephones, Bureau of the Census, 1932.)

It must not be assumed that independents were absorbed quietly or willingly by the Bell System. Pressure was brought to bear upon U.S. Attorney General George Wickersham to halt Bell's anticompetitive practices. As a result of numerous complaints, AT&T vice-president N. C. Kingsbury met with the Attorney General and, in 1913, there was established what has come to be known as the "Kingsbury Commitment." Under such Commitment, Bell agreed not to seek to acquire control over any *competing* independent telephone company, and it further agreed to connect its network to those of independents subject, of course, to Bell's own equipment standards. Bell was not precluded from acquiring *non-competing* independent telephone companies at that time and it continued to do so.

The effect of Bell's actions should immediately be apparent. Bell monopolized the denser and more profitable portions of the Nation and abandoned rural and less profitable areas to the independents. As the Walker Report has noted:

"The Bell System has fostered control of the telephone industry through the successful elimination of effective competition. Today the independent telephone companies, both operating and manufacturing, on the whole are weak. With few exceptions, they own exchanges in the smaller towns and communities which are not considered profitable by the Bell System." (Walker Report, at 134.)

In Bells' lexicon, its own practices can only be viewed as "cream-skimming"—a charge it often levels at those who are seeking to compete against it.

There can be little doubt that Bell's present attitude toward competition closely parallels its historical view. A Bell System spokesman was quoted as stating:

"A primary purpose of the American Telephone & Telegraph Company is the defense and maintenance of its position in the telephone field in the United States. Undertakings and policies must be made to conform to the accomplishment of this purpose. The American Telephone & Telegraph Co. is sur-

rounded by potentially competitive interests which may in some manner or degree intrude upon the telephone field. The problem is to prevent this intrusion." (Walker Report, at 235-236, quoting J. E. Otterson.)

The thrust of this statement of corporate philosophy is virtually indistinguishable from that offered by AT&T's Board Chairman in September, 1973, when he issued a public call² against competitive forces threatening to "intrude upon Bell's "position in the telephone field in the United States."

The later years

The Bell System's predatory tactics against potential competition did not end with the "Kingsbury Commitment." Although a monopoly position was virtually assured Bell in telephony, telecommunications progress resulted in the development of new areas in which potential competition to Bell became a likelihood. For instance, there arose during the late 1940's an increasing need for video carriage services as television came into vogue. As this was a new and rapidly developing field, various entities sought to gain entry to provide such services. One would-be entrant, Philco, unfortunately was reliant upon Bell for interconnection in order to provide end-to-end coverage. Bell arbitrarily refused to interconnect with Philco during one video transmission of an NBC program, originating in Philadelphia, to provide carriage from New York to Boston. Such action, and the threat of similar future actions by Bell, effectively forced Philco to withdraw from the video carriage market. Subsequently, the Commission endorsed Bell's monopolization of this new telecommunications market by permitting video carriage by private carriers only when no established carrier services were available.

In 1959, the Commission adopted its so-called *Above 890 MHz Decision* (Docket F.C.C. No. 11866) which provided that users of private line services could construct their own private microwave systems to satisfy their communications needs. The FCC specifically rejected Bell contentions that the radio spectrum should be reserved exclusively for common carrier services and that Bell should be protected from this form of "competition."

Having failed to prevent adoption of this Commission decision, Bell reacted by filing its "Telpak" tariffs as a matter of "competitive necessity." These tariffs offered discounts ranging from 51% to 85% for the bulk purchase of private lines and were intended to cause potential builders of private microwave networks to forego such an effort. While Bell argued that cost considerations warranted the huge discounts, the Commission found Bell's allegations of Telpak cost justification to be without merit. On the basis of its studies of Bell's costs, the Commission concluded that:

"... TELPAK and the other private line services are like communication services, and that there are no material cost differences between such services furnished under TELPAK on a volume basis and those furnished under the other private line tariffs on a circuit-by-circuit basis." (*In the matter of TELPAK* (Tentative Decision) 38 F.C.C. 370, at 381.)

The Telpak tariff was concluded to be discriminatory and unjustified in terms of costs. The Commission disallowed a half-portion of the tariff, but permitted the other half to remain effective on the ground of "competitive necessity", notwithstanding its discriminatory nature. The Commission, however, reserved judgment on whether the operational portion of the Telpak tariff was compensatory.

Significantly, the Commission noted that Telpak effectively inhibited the development of private microwave systems:

"As noted, a number of intervenors other than the principal parties presented evidence in the proceeding. These intervenors were, with one exception, users of TELPAK service, and the bulk of their evidence was directed to the benefits which they derived from the TELPAK schedule. They generally indicated that, absent TELPAK, they would give serious consideration to the use of private microwave systems." (38 FCC at 395, note 7.)

The TELPAK rate in the operational portion of the tariff never has been ruled compensatory—even some 14 years after its initial filing at the Commission—and there is persuasive evidence that, at the time of its inception,

² "An Unusual Obligation." Speech delivered by J. D. deButts to NARUC Annual Convention, Seattle, Wash., Sept. 20, 1973.

it was not compensatory. In 1964, the Commission ordered Bell to prepare the "Seven Way Cost Study" designed to measure the full costs of providing each of Bell's services. This study resulted in a finding that Telpak provided a rate of return of 0.3%! Even now—ten years after the Seven Way Cost Study—the most recent available study prepared by Bell for the Commission (August, 1972) discloses that Telpak's rate of return is a mere 4.9%. Since Bell's rate of return for MTS, a monopoly service, was 8.2% during the same time period, the conclusion is inescapable that users of Bell monopoly services—and not Bell Shareholders—are underwriting, and doubtless will continue to underwrite, Bell's competitive service offerings.

Apart from the question of the extent to which users of Bell monopoly services bore the brunt of Bell's Telpak offering, it is apparent that Bell successfully forestalled the development of private microwave networks. In 1966, the Commission concluded that implementation of private microwave had been "modest" and "almost totally in remote and rural areas." (*In the Matter of Rule Amendments to Permit Cooperative Sharing of Operational Fixed Stations*, 4 FCC 2d 406, 415, 1966.) Clearly, Bell was as successful in suppressing private microwave as it was in suppressing the development of the independent telephone industry.

The devastating impact of Telpak upon the Western Union Telegraph Company, whether intended or otherwise, is worthy of notice. The Commission stated that:

"... the application of such rates has diverted substantial amounts of revenue from Western Union. For example, uncontroverted evidence indicates that as of April 1962, Western Union had lost an estimated \$1.8 million in revenue from customers who had shifted their communication requirements to AT&T because of the lower TELPAK rates and an estimated amount of over \$4 million was in immediate jeopardy." (*In the Matter of Telpak* (Tentative Decision) 38 F.C.C. 310, at 394-395.)

In its "Report of the Telephone and Telegraph Committees in the Domestic Telegraph Investigation" (1966), the Commission concluded that Bell's rates for services competitive to those offered by Western Union were apparently deficient, when it stated:

"Instead, the data disclosed that, for each period in which a cost study was requested by the Commission, the Bell System's earnings level appeared to be deficient in areas where direct competition existed between Western Union and AT&T. Further, the record shows that AT&T did not appear to have adequate information upon which to determine the level of earnings by service, aside from those periods for which cost studies were made at the direction of the Commission and that the telephone company made no effective effort to determine the relative profitability of its telegraph service." (Report, at 207)

Without ascribing improper motives to Bell (but in language so clear that appropriate inferences may be drawn), the Commission posited the anticompetitive effect of Bell's actions:

"If the consistently low patterns of earnings for the competitive services proves to be indefensible, then the Bell procedures will have confined or limited the competitive threat of the only other common carrier capable of supplying the telegraph and record needs of the consumer." (Report, at 207.)

The recent years

In the terminal equipment field, Bell long was successful in warding off would-be competition by barring "foreign attachments" from its network by virtue of tariff provisions given the force and effect of law. When such inhibiting tariff provisions were challenged directly, they ultimately were struck down as unreasonable and unjustified on the ground that sweeping prohibitions on *all* attachments failed to render a distinction between those which were harmful and those which were not harmful to the telephone network.

It would be a mistake, however, to assume that removal of the inhibitive Bell tariff provisions resolved the controversy. Bell quickly rebounded with new tariff provisions which required that interconnection of non-Bell terminal equipment be accomplished only through "connecting arrangements" installed and maintained by Bell. While these devices allegedly protect the telephone

network from excess voltage and improper signals as may be generated by non-Bell equipment,³ it is evident that their required utilization increases the costs associated with use of non-Bell terminals and, further, obliged users of non-Bell terminals to divulge proprietary information to Bell respecting their communications configurations.

In order to ascertain the need, if any, for this Bell-imposed requirement of "connecting arrangements," the Commission instituted its Docket FCC No. 19528 in 1972. Lest its motives be mistaken, the Commission, at the outset of the proceeding, made it abundantly clear that its objective was to determine whether greater "liberalization" of Bell's interconnection restrictions would be in the public interest. Essentially, the Commission is looking toward the removal of any and all barriers to the interconnection of non-Bell equipment to the telephone network. Virtually every manufacturer of terminal equipment has opposed current tariff restrictions on interconnection as unreasonable and, in lieu thereof, has urged that an appropriate certification program be adopted with a view toward permitting the *direct* interconnection of non-Bell equipment to the telephone network once such equipment is certified as meeting technical standards established to maintain the integrity of the network. Bell, as might be expected, has chosen to characterize any removal of remaining tariff restrictions as likely to lead to "uncontrolled interconnection" which, by mere choice of language, connotes a disastrous consequence.

In its specialized carrier decision, the Commission concluded that the public interest would be served if competition were introduced into limited sectors of the total communications market. Implicit in this conclusion was the Commission's finding that certain segments in the communications market were ill-served by established common carriers and that the introduction of a competitive environment could serve to eliminate service voids and deficiencies by rendering available novel channel communications service offerings from new suppliers, and by motivating the established common carriers to respond to the needs of market segments long ignored in a monopoly environment.

For the Federal Communications Commission to equate furtherance of the public interest in efficient and economic communications with the introduction and maintenance of a competitive environment within which certain communications goods and services might be offered is extremely significant. Such Commission action clearly repudiates what Bell terms "the common carrier principle" which, translated into its essence, means "monopoly" provision of communications service.

Were the Bell System truly an efficient and economic supplier of communications products and services, users—particularly business subscribers—would not be turning to independent terminal equipment suppliers in large numbers, nor would these be looking to specialized common carriers, to provide channel services designed specifically to accommodate modern business needs. Clearly, it would be a mistake of the gravest nature to entrust the Bell System with primary responsibility for the development of future communications products and services. Its past performance in respect of product and service development discloses a sorry record.

The Commission first was appraised of the nature and extent of disenchanted market segments through its 1966 Computer/Communications Inquiry (Docket FCC No. 16979). Such market segments consisted primarily of data processors who, in the latter 1960's increasingly turned to communications service offerings to enhance their developing data processing networks. Never a contentious lot and usually preoccupied with the massive efforts necessary to accommodate their digital computer systems and networks to an analog communications network (with inadequate plant, rate concepts and tariff practices designed for voice communications), these organizations—both manufacturers and users—availed themselves of the unique opportunity afforded

³ Such "connecting arrangements" are *not* required when Bell equipment (or equipment purchased by Bell companies from equipment manufacturers other than Western Electric) is interconnected to the telephone network. The inference naturally arises that Bell equipment is technically superior; however, there is no basis to support such an inference.

by the Commission in its Inquiry⁴ to set into record the shortcoming of established carrier offerings and practices. Without exception, these organizations asserted, in 1968, that established carrier service offerings, philosophies and operating policies were inadequate in terms of the then existing and projected needs of the computer industry.

While the issues set forth in the Computer/Communications Inquiry pertaining to the aforementioned inadequacies of carrier service offerings and practices were treated peripherally and summarily by the Commission in both its Tentative Decision and its Final Decision therein, there is little doubt that the overwhelming negative response of computer industry spokesmen was a significant factor leading to the initiation of the Specialized Common Carrier Inquiry (Docket FCC No. 18920) in 1970. Further, there is little doubt that the inability and unwillingness of the established carriers to serve or to seek to serve adequately this emerging data processing market was a principal factor underlying the formulation and adoption of Commission policy in 1971 calling for the establishment of a competitive environment. In referring to DATRAN's then pending applications in its specialized carrier decision, the Commission recognized the uniqueness of DATRAN's proposal to construct and operate a communications network designed specifically for digital transmission when it stated:

"DATRAN proposes to construct an all digital technology data transmission system which would avoid the necessity of converting digital signals to analog and back again. It is offering service features designed to meet the special requirements of data transmission users, e.g., lower costs, end-to-end compatibility, rapid connection, high reliability, simultaneous two-way transmission, a wide selection of switched speed offering, a low incidence of network busy conditions, interconnection flexibility for user-provided facilities, asymmetry, etc. . . . Other applicants, while proposing to use analog or analog/digital transmission techniques, propose to offer both voice and non-voice services with facilities more closely designed to the requirements of transmitting data and other non-voice traffic.

* * * * *

The service and facilities proposed by DATRAN are markedly different from those proposed by any other applicant. It alone has proposed a switched, all digital end-to-end network (including digital local distribution facilities) exclusively for data transmission." (29 F.C.C. 2d 907, 908.)

Bell's reaction to the Commission's determination that the public interest would be served by competition in certain market segments has been to oppose, at every opportunity, the establishment of effective competition and, significantly, to revise its service offerings in an attempt to preempt the competitive market before specialized common carriers are able to establish themselves.

Bell resisted interconnection with specialized carriers even after the Commission had ordered such in its specialized carrier decision. In September 1973, Bell announced that it would provide only local distribution facilities to specialized carriers, and that such facilities would be provided under tariffs filed with state regulatory agencies rather than the Commission.⁵

In agreeing to provide *only* local distribution facilities to the specialized carriers, Bell effectively intended to exclude specialized carriers from a significant portion of the private line market—private line switched services—which market portion can only be served presently through interconnection with Bell facilities because of the limited level of specialized carrier development. Such Bell action was in violation of the Commission's specialized carrier decision and in further violation of a letter from Commission Chairman Burch ordering Bell to provide interconnection for *all* tariffed specialized carrier services. When Bell continued to balk at providing such interconnection, the Commission was forced to issue a show cause order demanding that Bell justify its refusal to supply the requested services. Subsequent to a Commission

⁴ Items G, H, and I therein pertaining, respectively to questions involving the adequacy of then-existing rate structures, regulations and practices contained in tariff schedules; the need for new common carrier tariff offerings or services; and the respects in which then-existing transmission facilities were inadequate to meet the requirements of computer technology, including accuracy and speed.

⁵ Subsequently, the Commission ruled that such tariff provisions must be filed with it.

proceeding in respect of its show cause order, the Commission *again* ordered Bell to supply specialized common carriers with "the interconnection facilities essential to the rendition of all their presently or hereafter authorized interstate and foreign communications services . . .". Bell has appealed this Commission order to the courts.

In October 1973, Bell petitioned the Commission to institute an evidentiary hearing into the "regulatory and policy problems presented by the licensing and proliferation of competing common carriers." Pending the outcome of such proceeding, Bell requested that the Commission defer granting further applications for facilities to specialized common carriers, domestic satellite carriers, and miscellaneous common carriers providing video services. This formal Bell action clearly was the outgrowth of its Board Chairman's September 1973 speech wherein he called for "a moratorium on further experiments in economics."

In December 1973, the Commission rejected Bell's petition as unwarranted in the circumstances, concluding that the operation of two carriers on two separate routes for a relatively short period of time did not provide sufficient experience to evaluate the Commission's competitive policy or its underlying rationale.

BELL'S HI-LO REVISIONS AND DATAPHONE DIGITAL SERVICE APPLICATIONS— MEASURES DESIGNED TO UNDERMINE COMPETITION

Each of the recent Bell maneuvers, just described, evidence deliberate tactics intended to delay or otherwise impede the commencement of operations by competing specialized common carriers. Problematical as these were and, indeed, as they continue to be, they nowhere approach in magnitude the overwhelming, direct assault upon a competitive environment, as envisioned by the Commission, as do Bell's so-called "Hi-Lo" rate revisions and its Dataphone Digital Service applications. If the Commission or the courts determine and conclude that these two Bell "responses" to competition are justified, then it is highly unlikely that specialized common carriers will be able to survive. With this the case, Bell will prevail and monopoly provision of domestic telecommunications will remain the reality of the marketplace.

The Hi-Lo rate revisions

In November 1973, Bell introduced its so-called Hi-Lo private line rate revisions. Such revisions became effective on June 13, 1974, notwithstanding the ordering of a formed Commission hearing to investigate into the lawfulness of such rate revisions. Under Hi-Lo, Bell has abandoned the traditional concept of uniform "nationwide" rate averaging for certain concept of uniform "nationwide" rate averaging for certain of its private line communications services. Traditionally, costs allegedly incurred by Bell in providing its services were averaged over the "entire Nation,"⁶ and rates based upon such costs were likewise averaged.

Essentially, Hi-Lo represents cost averaging and rates based thereon, not over the entire higher density portion of the Nation which Bell serves but, rather, over two cost zones therein—high density and low density. Asserting that high density zones—urban areas—are cheaper to serve than are low density or rural zones, Bell has repriced certain of its private line services so as to result in lower charges in urban areas and higher charges in rural areas for the same communications service.

Bell contends that its Hi-Lo revisions are proper in all respects on the grounds that Hi-Lo price differentials are more directly related to costs, and that the revisions will place Bell in a better position to meet the potential competitive challenge of specialized common carriers.

Under pertinent Commission statute and rules, the burden resides in Bell to justify these rate revisions. As contended by the various parties, including the Commission's own Common Carrier Bureau, in the Hi-Lo proceeding now pending before the Commission, Bell has failed to justify its revisions based upon cost and other factors and, in the absence of such justification,

⁶ Bell does *not*, in fact, serve the entire Nation; rather, it serves only the higher density, more profitable portions of the Nation. This is evident by the fact that Bell provides approximately 83 percent of the telephones in use in the United States although its service areas total a mere 42 percent of the contiguous United States in geographical area.

it has failed to allege and prove that such revisions are warranted by by "competitive necessity."

By virtue of the overwhelming nature of the Hi-Lo revisions,⁷ Bell has virtually preempted the market within which a competitive environment, in the public interest, was intended to operate. Unless the Hi-Lo revisions are rejected by the Commission, it is doubtful whether meaningful competition will ever arise.

Bell's Hi-Lo revisions are clearly an arbitrarily derived vehicle intended to accomplish market preemption, and the record before the Commission so discloses. Indeed, scrutiny of the purported cost justification of Hi-Lo renders such as suspect as that previously submitted by Bell in behalf of its Telpak offering. For example, Bell asserts that the lower Hi-D rate applicable within those centers where competition is anticipated is justified by the lower unit cost of transmission facilities between Hi-D centers. Yet, Bell does not take into account a "fill factor"⁸ for such facilities, and thus any assertion of lower unit cost has not been demonstrated. Additionally, Bell does not assure that all high density to high density transmissions will occur over high capacity ("cheaper") facilities. Thus, to the extent that low capacity facilities are, in fact, utilized for transmissions for which lower Hi-D rates are charged, the cost picture is distorted. Further, Bell makes no attempt to deaverage costs for local distribution facilities—a significant cost element within either Hi-D or Lo-D centers in terms of the total price charged by Bell for end-to-end service. Unlike transmission facilities, local distribution facilities are not subject to competitive forces at this time and, significantly, it is highly probable that the cost of providing such local distribution facilities in Hi-D urban areas is greater than the cost associated with providing same in Lo-D rural areas. Thus, a failure to deaverage local distribution facilities further distorts the cost picture alleged by Bell. Finally, Bell has vastly overestimated the market penetration and revenue diminution that specialized common carriers will bring to bear upon it. Having done so, Bell then proceeded to fashion a competitive response aimed toward a non-existent "level of competition." The net effect, of course, will be a severe weakening of the ability of Bell's would-be competitors to gain a foothold in the private line telephone market in order to compete.

Clearly, Bell's Hi-Lo revisions are in the tradition of Telpak and earlier Bell moves to eliminate independent telephone companies. The objective now is to eliminate specialized common carriers which, in Bell's philosophy, may "intrude upon the telephone field."

Dataphone Digital Service

In many respects, Bell's direct competitive response to DATRAN, Dataphone Digital Service, is a classic and visible example of the monopolist's ability to obstruct and impede those who would compete against it.

Commencing with DATRAN's original 1969 Commission application, Bell continually has taken the position that there existed no unsatisfied need for digital communications any, moreover, that it was willing and able to serve any future needs that might arise. In fact, as late as September 20, 1972, a Bell System advertisement stated:

"The Bell System is committed to meet *all* the Nation's need for digital data transmission." (Emphasis added).

When questioned by the Commission concerning this assertion, Bell replied that it was not its intention to preclude competition. However, the impact of this Bell "commitment" upon the financial community and potential users of DATRAN digital services was substantial in its inhibiting effect.

In view of the fact that proposed DATRAN operations would precede Bell's own digital time-table by several years, Bell developed its so-called "DUV" (Data Under Voice) technology as a stop-gap measure designed apparently for temporary use until such time as the development of its earlier planned digital technology was completed. Earlier Bell plans to utilize the LMDS and 2ARDS systems were shelved or, possibly, even abandoned by Bell thereby resulting in losses in millions of dollars for research and development ex-

⁷ High density centers within which lower rates are charged by Bell consist of 370 points. Specialized Common Carriers presently *propose* to serve *only* about 200 points.

⁸ The fill factor indicates how much of a given facility's capacity is used for revenue producing purposes. Unfilled capacity, of course, results in higher unit costs over a facility.

penditures previously associated with these particular systems. Not only are such costs plowed into Bell's rate base for purposes of ultimate payment by Bell ratepayers, but the use of DUV technology, DATRAN estimates, will cause Bell to forego revenues in the range of \$250 million over the next eight years because the frequency spectrum to be used for provision of Dataphone Digital Service is equally well suited for the provision of more profitable voice services. In effect, Bell is hoarding the frequency spectrum for future data use rather than utilizing it now for voice—this, at a time when Bell is expending in the range of \$10 billion annually to expand its plant facilities.

Additionally, the development of DUV as a stop-gap measure at this time raises serious technical questions as to its compatibility with future Bell digital systems.

In view of all the circumstances surrounding Bell's introduction of Dataphone Digital Service, there is persuasive evidence that it and its underlying technology were hastily drawn by Bell to meet potential competitive exigencies because of Bell's failure to estimate accurately the increasing extensive needs of data users and the extent of their particular disdain for the inefficiencies inherent in Bell's voice network.

It should be noted that Bell's reaction to proposed DATRAN services was not limited merely to the hasty development of an interim digital program. As early as 1972, Bell undertook a massive Nationwide advertising campaign to promote its digital service. Such campaign was undertaken well before such service was authorized by the Commission and, thus, well before it could be implemented. At least one advertisement was aired during a nationally-televised football game. Additionally, Bell conducted a massive customer "survey" of digital data needs. Bell representatives worked with customers to "plan" use of digital service—service for which Bell had not yet even applied for Commission authorization. Even now, as DATRAN is preparing to implement its innovative digital switch, Bell is conducting a Nationwide marketing "survey" to assess and evaluate switched digital needs.

While these Bell tactics would seem to be proper at first impression, they must be evaluated within the context of a market in which DATRON was destined to be the *first* supplier of digital data services. Such tactics have resulted in DATRON prospects assuming a "wait-and-see" attitude and, even more significantly, these have caused the financial community, the support of which is critical to DATRAN during its start-up phase, to balk at rendering commitments to DATRAN. These circumstances are somewhat analogous to those which arose when IBM, in response to Control Data Corporation's development of a large-scale general purpose computer in the mid-1960's, announced its "intention" to develop and market a like large-scale processor. This mere announcement by IBM, without more, "froze" Control Data prospects into inaction and resulted eventually in particularly damaging and measurable consequences to Control Data.

The rates developed and proposed by Bell for its Dataphone Digital Service are predatory and thus inimical to competition irrespective of the Bell costing principles utilized. As DATRAN has informed the Commission:

"Even if, arguendo, we accept Bell's basic methodology and objectives, the erroneous assumptions regarding specialized common carrier rates, geographical penetration and market behavior functions result in rates approximately 63% below the necessary to capture the market share 'projected' by Bell. If AT&T *now* prices its proposed service on the basis of fact, instead of unfounded assumptions, contribution will be substantially increased with no loss of 'projected' market share. Moreover, if the rate structure is not adjusted, AT&T will capture 100% of the market at a rate level approximately 26% lower than necessary. Thus AT&T's proposed rates are predatory."

Thus, Bell has pegged its proposed Dataphone Digital Service rates *26 percent lower than the level Bell believes is necessary to capture 100 percent of the relevant market*. Indeed, what has been characterized as a "competitive response" is, in fact, something quite different.

What is particularly distressing to DATRAN and others seeking to compete within communications markets where monopoly is neither natural nor justified is the difficulty in causing Bell to account for its rate programs in terms of service costing and the extent to which users of Bell monopoly

services subsidize or underwrite Bell competitive services. In both its Hi-Lo rate revisions and its Dataphone Digital Service proposals, Bell has focused on the objectives to be reached, has drawn its rates and tariffs to achieve those objectives, and then has manipulated theory and data to support its preconceived rate and tariff program. It is no secret, as this Subcommittee has been informed by others appearing before it, that the Commission, like DATRON and others, has encountered severe difficulty in seeking to separate fact from fantasy respecting Bell's ratemaking philosophy and practices.

CONCLUSION

DATRON expresses its gratitude to this Subcommittee for persevering to establish a most significant and revealing record respecting Bell's anticompetitive conduct. DATRON supports generally this Subcommittee's belief that redress for Bell misconduct may be achieved through Congressional rather than court or Commission action. However, DATRON believes it must pursue available remedies in any appropriate forum and it will continue to do so.

For some five years, DATRON has realized that Bell, by its overwhelming presence and overt conduct, is predisposed toward stifling competition in the private line voice and digital communications market. Its motives are apparent in its unjustified Hi-Lo rates, its DUV technology, its Dataphone Digital Service Rates, its advertising practices and its incessant call for monopoly. Its motives are further apparent in its litigious stance taken toward Commission decisions favorable to competition, and in its discriminatory local distribution and interconnect practices.

Bell's motives are understood, as may be witnessed in the number of private antitrust suits filed recently against Bell, and by virtue of the fact that the Department of Justice apparently is making detailed inquiry into Bell's behavior.

The success of Bell policies implemented in consequence of its motives are evident to DATRON in light of digital data prospects "lost" to Bell even though AT&T is not yet authorized to offer digital services. It is further seen in DATRON's difficulty in obtaining financing which, at least, must be attributed in part to a prevailing belief held in the financial community that Bell will win its declared war on competition.

The Congress should endeavor to establish a definitive competition policy in National communications with respect to those telecommunications submarkets where experience has indicated that competition will better serve the public interest. Congress should support this policy with such legislation as may be necessary to assure an industrial structure and environment within which competition may survive.

AMERICAN TELEPHONE & TELEGRAPH Co.,
Washington, D.C., September 19, 1974.

Hon. PHILIP A. HART,
Chairman, Subcommittee on Antitrust and Monopoly, Committee on the Judiciary, Russell Senate Office Building, Washington, D.C.

DEAR SENATOR HART: Enclosed find copies of response on behalf of the Bell System to Statement of Data Transmission Company which I would appreciate your filing and inserting in the record on the hearings on S. 1167 as they pertain to communications.

Very truly yours,

DOUGLAS B. McFADDEN,
Executive Assistant and Attorney.

RESPONSE ON BEHALF OF THE BELL SYSTEM TO STATEMENT OF DATA
TRANSMISSION CO.

In its statement filed August 9, 1974, Data Transmission Company (Datran) raises numerous issues which have been refuted in statements by Bell System witnesses before this Subcommittee. It is not our intention to burden the record of these hearings with a restatement of these positions.

It is worthy of note, however, that Datran's extensive review of the history of the telecommunications industry, as colored by its own perceptions, contains certain errors in fact. It also conveniently overlooks such significant events in the determination of public interest in telecommunications as the *Communications Act of 1934* and the May 1974 decision of the Court of Appeals for the District of Columbia.¹ These events were placed in perspective by E. B. Crosland when he appeared before this Subcommittee (Tr. 2604-2606).

As part of its attack on the Bell System's present and proposed technology and service offerings, Datran also would have the Subcommittee believe that the use of digital facilities for the end-to-end transmission of data is an idea which Datran originated and which Bell is hastily attempting to emulate with its DATAPHONE Digital Service in an attempt to preempt the market. Datran is patently incorrect; such allegations are totally without factual support. AT&T has identified the need for digital facilities and services long before Datran's initial construction application was filed with the Commission. The filing of AT&T's application to provide digital data facilities did not constitute an attempt to "preempt the market." Rather, it reflected AT&T's present ability to provide enhanced data communications services through the technological development of Data Under Voice (DUV). Indeed, the Commission in its *Specialized Common Carrier Services* decision specifically referred to AT&T's plans with respect to serving the data market and recited AT&T's position as follows:

There are no facts before the Commission to establish that the Bell System has been unresponsive to data needs, or that the applicants would provide services as efficiently and economically as the Bell System. The existing structure of the communications industry has served the country well, and the Bell System is responsive to new and emerging service needs including data (as shown by Appendix C to its comments, Appendix A to its reply comments, and its plans to complete construction of a digital data network for 60 cities by 1975). (29 FCC 2d at 888)

The Staff's analysis, which the Commission quoted with approbation in its Order in Docket No. 18920, also referred to AT&T's plans to provide digital facilities:

AT&T, in effect, recognizes some shortcomings in the use of voice oriented facilities for data transmission in that it is gradually working toward digital transmission with the "evolutionary approach" necessitated by its existing plant. As Datran points out, it apparently recognized this need some time ago. (29 FCC 2d at 883, n. 19)

The Bell System has been planning—almost from the initial installations of digital transmission systems in 1962²—to utilize digital facilities in data communications services. At that time, in comparing the economics of digital and analog transmission, and of time division multiplexing (TDM) and frequency division multiplexing (FDM)—both for voice and for data—the installation of extensive TDM and digital transmission facilities over FDM and analog transmission could not be justified. Early studies of separate data networks employing TDM and digital transmission indicated that in view of the ubiquity of the analog network and the small size of the then existing data market, such separate data networks would not be economically viable for some years. Continued evaluation, however, led to the initial use of digital facilities for wideband data in 1967. Additional studies of various approaches to extend the range of economic feasibility to voiceband and low speed data led to the drafting of a more detailed system plan in 1968.

In October 1969, a study was initiated to determine what routes could support the application of digital transmission for data and when the introduction of these digital systems would be economically justified. These studies indicated that digital systems would be economically justified and that digital transmission of data would be viable on selected routes in the 1973-1975 time frame. Based on these studies, a realistic schedule for equipment design, test, manufacture, installation and field evaluation was established. In a speech entitled

¹ *Hawaiian Telephone Company v. FCC*, F2nd (Case No. 73-1018 CA-DC 5-3-73).

² During the past decade, the Bell System introduced over 30M channel miles of digital transmission systems into the network.

"Meeting Future Communications Requirements" delivered in August 1970 by Mr. William Ellinghaus, then Executive Vice President of AT&T, he disclosed AT&T's schedule for DDS. Mr. Ellinghaus stated "... we will have, by the middle of this decade, a digital network in operation serving approximately 60 major cities. We plan to have this data network in operation on a private line basis in late 1973 or early 1974."

The studies clearly indicated the need for a low capacity system. In response to this need, Bell Laboratories' engineers developed the DUV facility based on new techniques which had only recently been developed. As the design of DUV as well as studies of its application to a digital data system progressed, it became apparent that DUV, because of its building block capability—i.e., developing a route from 1.5 up to about 27 mb/s in steps of 1.5 mb/s—was ideal not only for small routes but for large ones as well. As a result, the DDS plan of implementation was modified to reflect the capabilities of the DUV technique. Thus, it should be obvious that the Digital Data System utilizing DUV is not a hastily contrived response to competition but rather a well planned, well timed step in the evolution of data communications. Indeed, the FCC specifically found that "the basic DUV technology is sound and should be introduced into the plant and operations of the AT&T network."³

AT&T's view of the data communications market, the services required to meet the needs of that market, and the timing of such service offerings is in no way tied to what has been Datran's various and varying announced plans to offer service. AT&T has in the past provided the same transmission speeds proposed by Datran by means of analog channels on both a private line and common user basis, and will continue to do so in the future. The development of DDS will enable AT&T to serve a portion of this same market with net technology, better performance and lower costs.

Tuhs, Datran's suggestion that the concept of digital end-to-end service originated with them is clearly not so. The Bell System has for many years been following a fundamental network plan that includes consideration of the transmission of data in a digital format. The list of Bell System references in technical literature to data transmission over digital facilities is long and has previously been brought to the FCC's attention.⁴ One such reference—a February 1967 *Bell Laboratories Record* article authored by D.F. Hoth and entitled "Digital Communications"—very clearly and succinctly described the situation: "... a digital network is being planned that will be capable of operating over any distance and that will carry several thousand telephone calls, several television channels, or many data signals on a single pulse stream. All of the essential elements of such a network have been investigated."

Even prior to the publication of this article, as previously noted, the Bell System had begun to transmit wideband data over T1 digital facilities. In 1965 the first of a family of special purpose T1 data terminals was put into service and digital end-to-end wideband channels were provided. Thus, not only was Datran *not* the first to propose a digital end-to-end system, but its proposal did not even come until four years after the Bell System started providing end-to-end digital service.

Moreover, Datran's original filing with the FCC contemplated switched service at speeds of 150, 4800, 9600 and 14400 bps. Illustrative rates were cited for only these speeds. The private line rates "contemplated" were 150, 4800, 9600, 14400 and 40800 bps. Yet, the fact is that the service which Datran is now offering is *not* a switched service as originally warranted but a point-to-point service and at different speeds from those which it represented to the FCC it would offer. Thus, any similarity between Datran's specifications and those of DDS seem to have developed more than a year after AT&T disclosed its plans.

Insofar as the rates filed by AT&T for DATAPHONE Digital Service are concerned, the facts demonstrate that, contrary to Datran's assertions by whatever cost standard is deemed appropriate, these rates are proper and cannot be considered predatory. In the extensive materials furnished to the FCC in

³ Memorandum Opinion and Order released July 2, 1973 (41 FCC 2nd 586, para. 6).

⁴ See Appendix A of AT&T's reply in Docket No. 18920, dated December 3, 1970.

support of this tariff, AT&T presented the results of thorough and well-documented studies. These studies showed that the rates filed for this service resulted in the achievement of revenues significantly above the costs of providing the service, and this pertained whether long run incremental costs or fully distributed costs were used.⁵

In addition, it should be noted that AT&T has indicated its willingness to make digital facilities available to other carriers on non-discriminatory terms and that the regulations in the DATAPHONE Digital tariff relating to such matters as resale and shared use represent liberalization of comparable provisions in other AT&T tariffs. This is made possible because of the cost-related nature of the rate elements comprising this service. Many of the arguments raised by Datran have been raised before the FCC, which is evaluating the DATAPHONE Digital Service, and have been fully responded to and refuted by AT&T in those proceedings.

Moreover, while Datran's submission is couched in terms purporting to favor competition, Datran's true motivations are perhaps best demonstrated by its pending request to the FCC to completely exclude AT&T from the digital market for a period of five years.⁶

Datran also attacks AT&T's Hi Lo rates as an attempt to "preempt the market." The FCC is presently considering the lawfulness of these rates and the very arguments raised here by Datran have been raised before the Commission and, we believe, fully refuted by AT&T's presentation in that proceeding. The Hi Lo rates represent recognition of the significant cost differences involved in providing service utilizing high capacity facilities on high density routes on the one hand, and the significantly higher costs incurred in providing service on low density routes. In addition to the soundness on both economic and equity grounds of more closely relating rates to relevant costs, this departure from uniform rates reflects a recognition of the changing environment in which common carrier intercity communications are now provided. Various alternative methods are now available to customers to achieve their communications objectives, including those which will increasingly come about as a result of the Commission's policy determinations in Docket No. 18920 (29 FCC 2nd 870 (1971)), permitting so-called "specialized common carriers" (SCCs) to provide service on selected routes serving major market areas.

In these circumstances, it is clear that with other carriers operating on high density, low cost routes, nationwide rates based on the costs of both high and low capacity facilities will be too high to compete on high density routes even though AT&T's costs are significantly lower than the previous rates and below the anticipated rates of these new carriers. Thus, the pre-Hi Lo rate structure makes AT&T's private line services on these high density routes, where competition will appear, vulnerable to this competition in a way not justified by cost considerations. On the other hand, AT&T's rates were too low on many less dense routes to make an appropriate contribution to overall earnings requirements because costs often approach or exceed previous rates. Therefore, continued adherence to the existing rate structure would have resulted in significant diversion of Bell System revenues and a deterioration in the contributions which the private line services make to the coverage of overall interstate revenue requirements.

At anticipated levels of competition, by year-end 1976, without the restructuring of rates contemplated herein, revenue losses would exceed \$350 million and losses of contribution from these services would exceed \$190 million. Such losses would ultimately be borne by the users of other services, principally Message Telecommunications Service (MTS), in the form of higher rates.

Finally, it should also be noted, as pointed out by Mr. Crosland, while it took over a year and a half from the date AT&T proposed the Hi Lo rates to the time when they became effective, within days thereafter our competitors were permitted to put into effect—on one day's notice—rates which universally and systematically undercut the Hi Lo rates (Tr. 2623-2624).

⁵ While we do not believe that fully distributed costs are relevant for ratemaking purposes, it should be noted that it was estimated that a return on investment of 215% was produced by the filed rates using the FDC approach.

⁶ Datran Petition to Deny Application and Moratorium dated October 18, 1973.

Throughout its statement Datran has sought to assail the technology and service offerings of the Bell System. We believe that, in this response, we have refuted their charges relating to these issues.

CONSULTING COMMUNICATIONS ENGINEERS, INC.,
July 28, 1974.

THE ANTI-TRUST AND MONOPOLY SUBCOMMITTEE,
United States Senate,
Washington, D.C.

STATEMENT

To the Anti-trust and Monopoly Subcommittee :

I, C. Raymond Kraus, head of Consulting Communications Engineers, Inc., a group of 180 outstanding experts in communications technology, with great reluctance make this statement to you in the matter of the absolute control which the Bell System exercises in technical and other matters relating to telephone and supplementary services throughout the whole United States. It operates local telephone service in less than 50% of the geographical area of the country yet it exerts absolute control in 100% of the United States. This control must be tempered.

My colleagues and I are well aware and can demonstrate that in the United States in Bell Territory the public receives the best telephone service in the world by far and at the least cost. (It is substantially lower in cost than in any of the 15 developed countries.) In the Independent telephone areas the quality of service is considerably poorer on the average than in Bell areas measured by any reasonable standards and it costs the public more in Independent areas in general. My company can support these statements because we specialize in the quantitative measurement of quality of telephone service and have measured the quality of service in 33 states. The Subcommittee should be informed as to why this condition exists.

It exists because the products of the Bell System are the best in the world by a substantial margin. For example, in electronic switching systems Bell developments are 10 years ahead of others. This is also true in transmission systems including digital transmission systems and in telephone station equipment. The Federal government always buys Bell telephone station equipment because it is the standard of the world and is as much as 40% less expensive than products of other manufacturers. The Subcommittee should know that the output of the Independent manufacturers is much more costly and is of poorer quality than Bell's. It is a fallacy to believe that competition in utility manufacture automatically leads to better service at lower costs. At long last the power industry is getting together in funding research and development effort to improve power generating and power transmission facilities.

Bell has technical leadership, dedication and integrity, characteristics which stand out above non-utility organizations. The Bell System has done more for mankind than any other business organization since civilization began. If it were permitted to go into the businesses which it created by its developments it would be a greater growth company than any other.

Nevertheless, the Bell System, by its absolute control of technical and operating matters in telephone and related services, is denying the public services which are urgently needed today and which are in the public interest.

There is a relatively enormous time gap in communications between the telephone and the mail, the only universal services available to us all. This absence of communications is costing our nation untold hundreds of millions, if not billions, of dollars as a result of the delay in completing communications. A whole family of new services which are fast, inexpensive, accurate and reliable is available utilizing existing technologies. In particular, the proposed VOICEGRAM service is urgently required by business and the general public.

The Voicegram service is a novel system combining the technologies of the telephone and the telegraph. As proposed, it is a fast, reliable, inexpensive and accurate means of transmitting a short voice message from one telephone

to another. A simplistic description follows: (1) the caller dials the Voicegram computer with a 3-digit code followed by the telephone number of the person he wants to reach; (2) the caller's message is recorded in a computer. The computer then automatically calls the called telephone number. Calls are made with decreasing frequency but the computer continues to call until the phone is answered; (3) the message "We would be glad to come to dinner Friday night" or whatever is repeated several times when the receiver is lifted. A Voicegram would cost \$.25 locally and \$.50 across the continent. Attached in Exhibit A—"Preliminary Survey-Proposed Voicegram System"—is a more complete description of the service together with the results of a survey of businessmen, educators and engineers which shows conclusively and unanimously the great need of the public for this service.

The Bell System has refused to admit the novelty of the VOICEGRAM or the urgent need for services to help fill the relatively enormous time gap between the telephone and the mail. Furthermore, it has rejected a proposal for a trial even though it would be adequately compensated for its participation in such a trial. In view of this rejection, two billion dollar corporations and several Independent telephone companies are hesitant about investing money in a project in the face of Bell opposition. Although the FCC staff has indicated that it favors new services of this type for the public, without financial support an application for the service to the FCC would not be approved. Accordingly, we ask that legislative action be taken requiring Bell to cooperate in this matter. This arbitrary and autocratic attitude of Bell in technical and telephone operating matters is also being experienced by others. The president of one Independent company told me that he had suggested several times that he be permitted to participate in those technical and operating decisions made by Bell which affect his company. The suggestions were not acted on.

In many letters, papers and in verbal communications I have recommended that Bell lead the way in forming an industry body to establish nation-wide engineering and operating guide lines for the industry. There has been no movement by Bell in this direction.

In summary, the Bell System is the most unique and outstanding organization in our civilized world. Its performance in all areas of research, development, engineering, manufacture and telephone operation is so superior that:

(a) The quality of telephone service provided in its areas is substantially better than provided by the Independent telephone companies and at lower cost on the average.

(b) Its manufactured products lead the world and are 5 to 10 years ahead of the Independent manufacturers' products and any others elsewhere. These superior products are less expensive—up to 40% less costly than those produced by other manufacturers but by federal edict they are not available to the Independent telephone companies or to the rest of the world.

(c) The by-products of the Bell research and development have been instrumental in founding unnumberable companies which make electronics products. Its prestigious Bell Laboratories, in competition with all the other laboratories receives many more awards for scientific discoveries, inventions and developments in communications and related technology than the remaining laboratories in the world put together.

It is with great reluctance that I make the statement that, in spite of the technical leadership, dedication and integrity of the Bell System, characteristics which stand out above non-utility corporations, it is exerting absolute control in technical and operating matters related to communications which is not in the public interest. Its absolute control must be at least modified or tempered. I would prefer that Bell modify its absolute control of telephone matters voluntarily and I so recommend it. I do not seek technical or operating control by the government because this could only be disastrous for all and especially for the general public; rather, I recommend a planning group formed solely within the telephone industry with no representation by government.

Should Bell not agree to some tempering of its control, I recommend immediate legislative action to clear the way for providing business and the general public with urgently needed services, especially the Voicegram service with the required cooperation of the Bell System.

Sincerely yours,

C. RAYMOND KRAUS,
President, Consulting Communications
Engineers, Inc.

Enc:

RAYMOND FRANKS
PRESIDENT

CONSULTING COMMUNICATIONS ENGINEERS, INC. 645 MOUNT MORO ROAD, VILLANOVA, PENNSYLVANIA 19085 215 525 8445

REPORT

PRELIMINARY SURVEY

PROPOSED VOICEGRAM SYSTEM

July 1974

I PURPOSE OF SURVEY

The purpose of the preliminary survey was to secure the opinions of selected prominent businessmen, educators, scientists and engineers as to:

- (a) The unfilled time gap between the mail and the telephone.
- (b) The need for the VOICEGRAM and other proposed services, such as the FAXGRAM.

The results of such a survey, if favorable, would be a first step in a proposal to secure funds for a more elaborate survey of the public's overall communications needs. No such survey has been made previously.

II SURVEY LETTER AND ENCLOSED MATERIAL

1. Letter
2. Statement
3. VOICEGRAM Proposal Summary
4. MEETING THE PUBLIC'S COMMUNICATIONS NEEDS
5. PROPOSAL FOR A NEW NATIONWIDE COMMUNICATIONS SERVICE
6. MORE COMMUNICATIONS FOR THE PUBLIC

C. RAYMOND KRAUS
PRESIDENT

CONSULTING COMMUNICATIONS ENGINEERS, INC.

845 MOUNT MORO RHAD, VILLANOVA, PENNSYLVANIA 19085 215 525 8445

Dear Mr.

I want to secure a number of statements regarding the urgent public need for a new family of one-way communications services from impartial sources, such as educators and businessmen. These services, of which the VOICEGRAM is an example, would help fill the relatively enormous time gap between the telephone and the mail.

Enclosed is a statement which summarizes the situation today, several papers on the subject and a summary which is part of a 100-page brochure covering VOICEGRAM system design, means of introduction and financial requirements.

If you are in favor of the new services, including the VOICEGRAM, would you kindly let me have a letter on your stationery. It is desirable that the statement be in your own words.

Should you wish to discuss the matter with me, will you kindly call me collect at 215-525-8445.

Your assistance in the matter will be greatly appreciated.

Sincerely yours,

crk/hba
Encs.

C. Raymond Kraus

STATEMENT

Communications is the life-blood of our nation yet the general public, including small business, has only two means of communicating - the telephone and the mail. (The dying telegram cannot be considered as a means since it is costly, unreliable, inaccurate and time consuming to employ.) There is therefore a relatively enormous time gap between the telephone and the mail - 12 seconds to days - which penalizes the carrying on of all business and social correspondence.

There is a whole family of new one-way services which are urgently needed by the public to fill the communications time gap. One of these is the proposed VOICEGRAM, a short one-way voice message service which would be fast, reliable, inexpensive, accurate. This service would replace the telegram and supplement the telephone and the mail. Its market potential is over a billion dollars annually.

The problem today is that the technologies of the telephone and the telegram have been kept separate. The VOICEGRAM integrates the two technologies.

No new technical break-throughs are required to establish these vitally needed services, merely a recognition of the public's communications requirements.

SUMMARY
PROPOSAL FOR VOICEGRAM
A NEW NATIONWIDE COMMUNICATIONS SERVICE

A new urgently needed communications service has been developed for the general public. The new service is a unique automated means of delivering a short verbal message called a VOICEGRAM from any telephone to any other telephone. The VOICEGRAM is inexpensive, fast, accurate and reliable and has a market potential of several billion dollars annually.

The potential demand for the VOICEGRAM results from the fact that there is no reliable means of transmitting information from person to person other than the telephone and the mail. (The dying telegram is costly, inaccurate and to a significant extent, unreliable.) Thus the general public currently must depend on the telephone and the mail and must suffer the severe economic penalties of the relatively large time gap between the two: from 12 seconds to complete a telephone call to one or more days for the mail. Big businesses have teletype and data transmission means at their disposal, but there are only several thousands of such businesses in contrast to the 125 million telephones which reach every office, business and practically every household.

Some idea of the magnitude of the need for VOICEGRAMS may be secured from the following:

1. There are annually over 50 billion uncompleted telephone calls, of which several billion are urgent.
2. Around 10 percent of the telephone calls are made to deliver only a few bits of information, e.g. yes, no, where, when.
3. VOICEGRAMS are inexpensive compared to letters, telegrams or transcontinental telephone calls.

The novelty of the VOICEGRAM lies in its integration of two technologies - those of the telephone and the telegram, the use of a computer for automation and the addition of a means for mechanizing the billing as part of the monthly telephone bill.

To send a VOICEGRAM the calling party dials a code preceding the telephone number to which the VOICEGRAM is to be delivered. The call is routed to a VOICEGRAM Center where the computer requests the caller to speak his VOICEGRAM and then disconnect. The computer having recorded the message proceeds to make a telephone call to the called number. If the called number answers, the computer informs the called party that a VOICEGRAM is about to be delivered and then repeats the VOICEGRAM a specified number of times or until the called party disconnects. If the called telephone does not answer or is busy, the computer makes a second attempt after an appropriate delay. Successive attempts are made at increasing time intervals until completion is achieved. The proposed service is more sophisticated than the above description and includes various classes of VOICEGRAM: urgent, normal, overnight, collect, etc.

The estimated current market potential of 5.4 billion VOICEGRAMS annually, as shown herein, represents a volume equivalent to about 3 percent of the total telephone calls. However, in making financial estimates of revenue and in systems design, the volumes assumed are about 0.2 percent of the telephone calls at the end of the first year with a gradual build-up over a ten-year period to 0.4 percent. Thus, the VOICEGRAM traffic is estimated to be equivalent to one VOICEGRAM for every 500 telephone calls at the end of the first year in the trial area with an increase to double this figure over a ten-year period. It is felt that these estimates are conservative.

It should be appreciated that operation of the VOICEGRAM system would be subject to regulation by the FCC and also by the State Commissions. Accordingly, the rate of return on the plant would, in the long run, be limited to about the same rate as permitted the AT&T Co., namely in the range from 8 to 9 percent. However, this would apply only after the VOICEGRAM system had become fully established. Initially, returns of around 15 percent or more would be considered reasonable in order to enable the corporation to develop the service rapidly throughout the country.

At the end of four years with an investment of \$50,000,000, the net income after taxes is estimated at \$9,700,000 with a cash flow of \$15,000,000. Projections to 10 years involve an investment of \$500,000,000 with revenues of \$750,000,000 and a net income of \$60,000,000 after taxes.

With full development, the VOICEGRAM should achieve at least 3 percent of the telephone call volume or about 11 billion VOICEGRAMS in 1990. Revenues would be \$7 billion on a plant investment of \$4.5 billion and net income after taxes of \$310 million. This would represent a return on plant of 9 percent and on equity of over 12 percent.

Because the automated VOICEGRAM service requires about two years of development effort and a large additional investment of over \$40 million to install the service in two cities, it is proposed to develop a relatively inexpensive semi-automatic VOICEGRAM system for trial in two locations. The net cost of two years of trial operation would be \$4 million. The purpose of the trial system would be to determine the degree of the public's acceptance and to secure data relative to the many design parameters needed for the engineering of the final system. The cost of the manual operations in the trial system will preclude it from being profitable.

Before VOICEGRAM service can be furnished to the public, a number of barriers must be overcome. While none of these are insurmountable, considerable effort will need to

be expended in a number of different directions.

First, approval of the FCC must be obtained and after this approval of the State Commissions. It is anticipated that the AT&T Co. will initially oppose authorization and although this may delay matters, there is little chance they can hold it up indefinitely. The FCC staff has indicated that it would look favorably on the new service. Full cooperation of the AT&T Co. is essential in the design and operation of the VOICEGRAM service, since the VOICEGRAM Centers will interface with the existing telephone plant. As for the State Commissions, little difficulty is expected after approval by the FCC.

Favoring the acceptance of the VOICEGRAM service by the telephone people is the fact that initially 65 percent of the revenues would be returned to the telephone company; even with full development of sophisticated VOICEGRAM Centers, the portion of VOICEGRAM revenues which would be returned to the telephone companies would be about 45 percent.

Considerable development work is required in the design of an analog store and forward computer in the VOICEGRAM Center. While no new techniques are required in its design, the VOICEGRAM Center will be the first large computer employing voice message storage. The technology is clear-cut and well-known; the problems are mainly those of scale (i.e., large size).

Some have expressed the opinion that the most important barrier to VOICEGRAM service is in the matter of public acceptance, including education of the general business and resident public in the use of the service. In answer to this, it appears that the demand for better and faster communications is approaching what has been termed as a "communications' explosion". Indications of this are the striking increases in the number of telephone calls made by the individual users and also the launching of many new services for large businesses in data trans-

mission. It should be appreciated that no new universal communications' service has been offered to the consumer since the invention of the telephone almost 100 years ago. Accordingly, it is believed that the urgent need for the VOICEGRAM will be the main factor in its acceptance by the public.

Relative to the patent, our lawyers advise us that the patent coverage is broad and that it will stand up in court should Bell decide to contest it.

To date, the Western Union and the Bell System have refused to discuss VOICEGRAM service officially. However, the technical telephone people generally agree that the service should be furnished. One executive stated: "It's a natural."

The studies included herein have been performed by experts for the specific purpose of developing material for this proposal. Accordingly, the data should be regarded as preliminary in nature and must be supplemented by considerable work effort in the course of the detailed engineering of the VOICEGRAM system and the VOICEGRAM trial system.

The information and data herein on VOICEGRAM service cover the major aspects of the service. The purpose of this Proposal is to attract adequate capital funds for introducing the service.

C. RAYMOND KRAUS
PRESIDENT

CONSULTING COMMUNICATIONS ENGINEERS, INC. □ 845 MOUNT MORO ROAD, VILLANOVA, PENNSYLVANIA 19085 215 524 8445

MEETING THE PUBLIC'S COMMUNICATIONS NEEDS

C. RAYMOND KRAUS

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Conference of the Institute of Electrical and Electronics Engineers,
Seattle, Washington, June 11-13, 1973

ABSTRACT

The paper points out the inadequacies in our existing communications media, the mail and the telephone, in serving the public. In particular there is an enormous gap between the two which is not fully appreciated. Utilizing existing technologies and the one universal random access (telephone) network a number of viable services such as one-way voice, one-way record should be established at once for the general public.

I INTRODUCTION

Communications between individuals is the lifeblood of our nation. Yet the general public has only the telephone and the mail as media aside from face-to-face conversation. The telephone is our most important means of random access communications by a factor of 10 or more. The rate of increase in telephone conversations is about 5 percent per year, whereas mail is growing about 3.5 percent annually according to John R. Pierce in the September 1972 *Scientific American*. There is a 10% annual increase in intercity calls while the percentage yearly increase for overseas calls is about 25%. Thus, in the area of random access to the whole country the telephone reigns supreme, with the mail a poor second and the telegram a negligible factor. Furthermore, the relative importance of the telephone is increasing daily.

The tremendous potential of the telephone network for new and vastly different services encompassing voice, record, data and video signals of all types - for both one-way and two-way transmission - is frequently overlooked. However, Peter Goldmark, in the September 1972 issue of *Scientific American*, proposes four networks to each household and office, but states that:

"The primary network already exists but should be encouraged to expand. It is the telephone network: a full, two-way, random-access network that can accommodate voice, data and (at present only to a limited extent) pictures. The basic attribute of the network is its ability to put anyone in personal touch with anyone else quickly and reliably. With the advent of data processing this network could provide a similar random access between man and machines or between machines. It can be looked on as providing a pipeline into every home, office and library through which one can not only converse but also transmit written materials and pictures."

The telephone, miracle of our modern age, has certain fundamental deficiencies when it is examined in the light of the objective of instantaneously enabling two individuals to converse. The chance of this happening on the first try is about 1 in 5. Furthermore, it is not in tune with our computerized age because of the lack of speed of connection, lack of sophistication, and a local rate structure which is not, with some exceptions, related to customer usage.¹

Between the two media there is an enormous gap, unappreciated by many. Time-wise this gap is from 12.5 seconds to many days. No new universal communications service has been provided for the general public since the invention of the telephone almost 100 years ago. This in spite of the fact that the technology is available today to fill the gap with a whole family of services.

This paper is an attempt to explore, in a general way, the various communications needs of our technological society, including the specific communications' needs of the 200 million citizens, as well as the millions of small businesses whose wants have not been satisfied by the common carriers, nor have they been researched by the regulatory bodies. It confines itself to random access communications between people connected to the national and international network.

II INADEQUACIES OF EXISTING COMMUNICATIONS MEDIA

A. The Mail

It is generally recognized that the mail service is poor, particularly in certain difficult areas. A particular case in point is from the suburbs of Washington to the suburbs of New York. The problem here is not only with increases in volumes of mail, but with a less efficient production due to untrained or undisciplined employees. The telephone and the telegram are similarly affected in these areas. Typically, it takes 3 - 6 days for such mail to be delivered.

If an input is needed from - say - Fairfax, Virginia, to Elmhurst, L. I., (which must then be processed to send to Washington) the situation becomes almost impossible, and the author frequently sends messengers to pick up and deliver data in order to meet dates. Discussion with other firms indicates that this need for faster delivery of information is almost universal.

However, the growing volume of all kinds of mail, particularly junk mail, is placing an almost impossible demand on the postal service. True, it is making heroic efforts to institute one-day service, but even so, the physical transportation over great distances of these masses of information typed on paper is intrinsically a carry-over from

our horse and buggy days. What is needed now is modern, accurate, prompt common carrier records service. The technology is here. Only the complete inertia in the face of the urgent needs of the general public has prevented its being provided.

B. The Telephone

Although the telephone is by far the most important communications service in our society, it is woefully inadequate as a means of enabling two people to talk instantaneously with each other. The caller's intent on making a call is satisfied only if:

1. the called telephone is idle
2. the called party is available at the called telephone

Considering (1) above - telephone people pride themselves on the percentage of completed calls which is usually on the order of 70%, due to busies and don't answers. Let us then assume that the probability of completing a call is 0.7.

With reference to (2) above - the probability of the called party being available is much less, and the author has deduced this probability from his own experience and that of his associates. This runs from 0.05 for top executives to 0.3 for workers and housewives.

The overall probability, then, of reaching the called party as seen from Table I varies from 0.035 to 0.21 - a rather unsatisfactory prospect.

What happens, of course, is that the caller has these choices if the called party is not available:

1. attempt to transact the business with the person answering the telephone or with someone else to whom he is referred
2. call again
3. ask the party to call him
4. give up

There is also a specific area of communications involving small amounts of information in which the telephone is used because it is the only medium now available. This is in reply to queries - whether received in person, by telephone or by mail - when the questioner wants only one bit of information; e.g., yes or no, what time, etc.

A typical situation: Male readers have experienced the vicarious frustration passed on by their spouses when they complain, "I have called Jane five times to tell her we cannot be there on Saturday but she is never home, and it's too late to send a note."

Then too, there are the many instances when the caller does not want to talk to the called party, but feels he must in order to transmit a few bits of information since the mail is too impersonal, too slow or too expensive. (A simple business letter costs \$3 or more.)

In summary, the telephone as a means of instantaneously enabling two people to converse with each other is a most inefficient device since:

1. In less than 1 call in 5 or more is the called party reached.
2. About 30% of the calls are to transmit a few bits of information.
3. The result of (1) and (2) is that the caller wastes an inordinate amount of time making telephone calls.

The conclusions are:

- (a) The telephone, important as it is, is a time waster and it is used many times because there is no good substitute.
- (b) It should be supported by a whole family of one-way voice, record and video services, in order that our technological society may operate in an efficient manner.

C. The Telegram

The declining use of the telegram indicates that it is not meeting the public's needs. It is slow, inaccurate and costly. It utilizes a manually operated and extraordinarily expensive intercity plant, in between the use of the random access telephone plant, for origination and delivery of the message. The telegram should be replaced by one-way voice and one-way record services, proposed herein, utilizing exclusively the one economical random access (telephone) plant.

III FILLING THE GAP BETWEEN MAIL AND THE TELEPHONE

A. The Enormous Gap

The average citizen and the average small business man are unaware of the existence of an enormous gap in communications between the telephone and mail. Their thinking is geared to the time lag between the completion of a telephone call (12.5 seconds) and the mail (24, 48 and 72 hours or many days later). The large communications user bridges this gap with Telex, TWX, private line teletype, private line facsimile and private line data transmission facilities. These specialized services help the large users for internal and external communication, but when it comes to random access to all of the small businesses and the house-

holds of the nation, the large corporation is also faced with this enormous gap and is helpless to solve it except by extraordinarily expensive means. These means consist of:

1. private messengers - these are rather numerous
2. private cars, trucks and airplanes carrying messages, data and intra-company correspondence
3. meetings which are hurriedly held to exchange data

The author and many of his business acquaintances must frequently resort to the above, especially to private messengers to fill the gap.

Since these specialized means of filling the gap are too expensive, most businesses are slowed down to the speed of the mail service. Such waste of time, averaging 48 hours or more from mail to delivery, is an expensive drain on our economic system. In the opinion of the author, studies would show savings to business in the order of tens of billions of dollars annually if the gap were bridged with a variety of new services.

The failure of the telephone and of the mail to perform efficiently, as discussed earlier, and the magnitude of the gap between the two suggests that the public urgently needs the means for filling this gap. These vital services are discussed herein.

B. MAILGRAM

The MAILGRAM is welcomed as the first of a series of new record services for the whole USA. Originated by telephone on an INWATS basis, the teletyped message is transmitted to a post office near the addressee and is delivered next morning by the mailman. WU and the Post Office are to be congratulated on introducing this first step in a joint venture which, hopefully, is only a beginning.

The MAILGRAM fills a specific need for one type of next-day record service. It, however, has the usual built-in inaccuracies and deficiencies. Among these is the time required to originate it.

C. Proposed New Services for the Public Today

1. The SUPERMAILGRAM

There is still the need for delivering a record the same day as transmitted, and it is proposed that WU and the Post Office institute a premium service called the SUPERMAILGRAM to deliver a short message the same day. This service would be originated by telephone in the same manner as the MAILGRAM. It would fill a need, and although the costs would be relatively higher, it would be priced as a premium service with same day random access to the households and businesses throughout the nation. It could not be other than highly successful.

2. The VOICEGRAM

This universal one-way service from one telephone to another is urgently needed because it is fast, accurate, personal and inexpensive. It is described in detail in the IEEE ICC '72 Conference Record. Briefly, to send a VOICEGRAM the sender dials three digits plus the telephone number to which he wants the VOICEGRAM delivered and, at the request of a VOICEGRAM SERVICE CENTER computer, speaks his VOICEGRAM into the computer. The computer automatically calls the desired telephone, informs the answerer that a VOICEGRAM is about to be delivered, and repeats the VOICEGRAM until the recipient hangs up. In case the telephone is busy or does not answer, the computer - under control of a special program - makes successive attempts to complete the call at various intervals. The class of the VOICEGRAM, urgent, normal or stated time, is placed into the system by the sender either by voice to an operator or via Touchtone.

The VOICEGRAM rate structure would be geared to a 15 second message; this could be delivered locally for around \$.25 and across the country for \$.50. Some of the telephone people have expressed concern that VOICEGRAMS would supplant part of the DDD traffic. It is doubtful, however, whether such an effect could be measured; but if it were so, 45% or more of the VOICEGRAM revenues would be returned to the telephone companies. Full cooperation of the telephone companies in the design of the service is required.

The need for the VOICEGRAM may be better understood if several situations, wherein it should be utilized, are described as follows:

- a. John is leaving the office at 5:00 p.m. and Paul cannot be reached. He wants Paul to take the 9:00 a.m. plane to Chicago.
- b. Tom, in San Francisco at 4:00 p.m., wants to get a message to Dick in his office in New York. He will not be able to call the next morning.
- c. At 5:15 p.m. the busy executive wants to call a meeting at 9:00 the next morning with five of his people, but has difficulty reaching any of them.
- d. Nancy wants to accept a written invitation to dinner but cannot reach the hostess since there is no one at home.
- e. Tom has dialed Dick four times in the last hour (he is getting a busy signal).

The answer to all of these is a simple one-way voice message service employing a store-and-forward analog data system associated with the telephone network.

3. FAXGRAM Service

a. PHASE I

The FAXGRAM Service is absurdly simple in its early primitive form. It consists of a facsimile transmitter located in all sizable post offices and connected to a telephone line giving access to the telephone network. A separate FAXGRAM receiver, connected also to a separate telephone line from the telephone network, would also be installed in each of the designated post offices. This receiver would not, as envisioned, be available to the public. The public would have complete access night and day to the FAXGRAM transmitter which would be coin and credit card operated. The user, to send a FAXGRAM, would make a telephone call to the particular post office having FAXGRAM service nearest the addressee. Upon connection of the distant FAXGRAM receiver, the user would place his copy in the FAXGRAM transmitter. Under this Phase I system it would take 3 minutes per page.

The FAXGRAM receiver would receive the facsimile transmissions and automatically fold and seal them with the addressee's name and address visible outside. The next morning the mailman would deliver the FAXGRAM to the addressee. Phase I would also include less than page size messages - one-quarter or one-half of an 8½ x 11 page.

b. PHASE II

As the service grows, a telephone switching network devoted exclusively to FAXGRAM service would be provided. Initially only post offices would subscribe, but as FAXGRAM service became more popular it would be furnished to and from customers' premises. The Phase II and later services would provide wider transmission bands. It is conceivable that variable bandwidths or digital data transmission capacities would be available and, if one wanted to send 200 pages in a short time, that a high capacity transmission link would be established instantaneously for this purpose. A nationwide directory service providing FAXGRAM numbers would be a part of the service.

4. The SUPERFAXGRAM

With the establishment of the SUPERMAILGRAM, the SUPERFAXGRAM could likewise be established. This would involve origination of a FAXGRAM at the post office and subsequent delivery the same day from a distant post office. This accurate, fast service would be ideal for transmitting either a quarter page of material or many pages. This, plus the SUPERMAILGRAM, would provide the public with a satisfactory record service at reasonable prices, and thus serve to help fill the enormous gap between the telephone and the mail.

5. TELEVIDEO Service

Televideo service is a means of transmitting words or pictures over the DDD network to telephones equipped to receive the service. It is of interest to note that the author sent recognizable pictures over 180 miles of voice telephone facilities in 1954. This was done by a slow-scan television system which required 4 seconds to transmit the picture.

The author believes that there is a large market for a whole family of such video services, which would send charts, pictures, data and words, without requiring the bandwidth involved in the motion of current television.

One type of televideo service could be established to send pictures and words to an unattended telephone equipped with a telephone answering set and a relatively inexpensive video tape recorder. The picture, together with words, could be played on the recipient's television set when he returns to his office. SUPERMAILGRAM and SUPERFAXGRAM service could also be completed in this fashion.

6. Other Services

There is literally no end to the types of services which can be easily provided by the telephone network. These vary from an inexpensive intruder alarm system utilizing the telephone to store and forward data services. The author's Associates are contemplating several new systems.

D. Proposed New Services for the Large User Today

1. The TELEMALGRAM and TELE-SUPERMAILGRAM

These services are parallel to those already being provided in Canada. The message is originated at TWX or Telex teletype machines and is delivered next morning (TELEMALGRAM) or the same day (TELESUPERMAILGRAM) by the mailman. These services are urgently needed if the "gap" is to be partially filled.

2. Other Services

For the large user, a store and forward data service should be provided. The No. 1 ESS has already been adapted for this service. The large user and the specialized user will continue to require tailor-made services. All of these can be best provided by the random access plant of the telephone companies at least cost to the user.

IV REVIEW OF PRICE STRUCTURES

The cost and cost per kilobit for the various existing and proposed services are shown on Table II-Voice Transmission and Table III-Record Transmission. As expected, mail is the least expensive. The telegram has priced itself out of the picture by being

an order of magnitude more expensive than the MAILGRAM on a cost per kilobit basis. However, the SUPERMAILGRAM provided by the Post Office would take the place of the telegram. The inexpensiveness of Canada's Telepost indicates that this service, which is called the TELEMALGRAM and TELESUPERMAILGRAM, should be provided here for the users of TWX.

The VOICEGRAM and the FAXGRAM and SUPERFAXGRAM are relatively inexpensive. The VOICEGRAM is the least expensive on a cost per message basis. The local FAXGRAM is \$.04 per kilobit and the transcontinental FAXGRAM is \$.24 per kilobit. This is less expensive than the MAILGRAM and in the same order as the Canadian Telepost.

The conclusion is that all of these services are reasonable in cost, and since each fills a specific need they should be provided to our 200,000,000 citizens as soon as possible.

V CONCLUSIONS

The conclusions are:

1. In spite of its tremendous importance (it is an order of magnitude more important than the mail), the telephone alone is an ineffective means of communications if the immediate objectives of the caller are considered. Likewise, the mail and the telegram are ineffective in meeting our impatient needs, and the mail is currently the only available backup to the telephone.

2. Accordingly, a whole family of communications service for the public at large should be immediately established to fill the enormous gap between the telephone and the mail. These services are viable today, and can be established with existing technology utilizing our one random access network. The family of services include one-way voice, one-way facsimile, as well as other services combining the mail service and the use of the telephone network.

Among the first of these wholly new services to be established should be:

FAXGRAM

VOICEGRAM

SUPERMAILGRAM (replacing the telegram)

Others, for the large users, should include:

TELEMALGRAM

TELESUPERMAILGRAM

There are many possibilities for other services.

TABLE I
PROBABILITY OF HAVING A
TWO-WAY CONVERSATION WITH CALLED PARTY

To	Probability of completion of telephone call	Probability of called party being available	Probability of two-way conversation with called party on first call
Top Executive	0.7	.05	.035
Middle Executive	0.7	.10	.07
Supervisor	0.7	.20	.14
Worker	0.7	.30	.21
Housewife	0.7	.30	.21

Note: The author encourages the receipt of data which would add to the accuracy of the above

TABLE II

VOICE TRANSMISSION

<u>Existing Services</u>	<u>Words (1 word per sec.)</u>	<u>Bits</u>	<u>Cost</u>	<u>Cost per Kilobit</u>
TELEPHONE				
Local (5 min.)	300	12,000	\$.07	\$.006
Transcontinental (3 min.)	180	7,200	1.00	.14
TELEGRAM (Delivered by Telephone)				
Local	15	600	2.25	3.75
Transcontinental	15	600	3.95	6.58
<u>New Service</u>				
VOICEGRAM				
Local	15	600	.25	.42
Transcontinental	15	600	.50	.84

TABLE III

RECORD TRANSMISSION

Existing Services	Words	Bits	Cost	Cost per Kilobit	Notes
MAIL					
First Class	800	32,000	\$.08	\$.0025	
Air Mail	800	32,000	.11	.0034	
Air Mail-Special Delivery	800	32,000	.71	.022	
TELEGRAM (Delivered by Messenger)					
Local	15	600	3.50	5.85	Service available only in downtown areas of large cities
Transcontinental		600	5.45	9.10	
MAILGRAM (Originated by Telephone)					
Delivered by mailman next morning	100	4,000	1.60	.40	
TELEPOST (Canada)					
Delivered by mailman					Service available only to Telex customers
- next morning	unlimited	8,000	.75	.094	
- same day	unlimited	8,000	1.15	.144	
DATAPHONE (DDD Network)					
	(2,400 bits per second)				
Local		752,000	.07	.00009	Requires Modems and other apparatus
Transcontinental		452,000	1.00	.00244	
New Services					
FAXGRAM					
Delivered by mailman next morning					
Local - 1 page	200	8,000	.35	.04	$\frac{1}{4}$ & $\frac{1}{2}$ page at reduced rates
Transcontinental - 1 page	200	8,000	.65	.08	
SUPERFAXGRAM					
1 Page - Delivered same day					
Phase I (DDD Network)					
Local	200	8,000	.95	.12	$\frac{1}{4}$ & $\frac{1}{2}$ page at reduced rates
Transcontinental	200	8,000	2.25	.28	
Phase II (FAXGRAM Network)					
Local	200	8,000	.95	.12	$\frac{1}{4}$ & $\frac{1}{2}$ page at reduced rates
Transcontinental	200	8,000	1.45	.18	
SUPERMAILGRAM					
Delivered by mailman same day	100	4,000	2.50	.63	
VIDEOGRAM					
(3 frames per minute, 50 words per frame)					Pictures & charts may also be transmitted. Recorded on Videotape, then replayed
DDD Network					
Local	750	30,000	.07	.0023	
Transcontinental	450	18,000	1.00	.055	

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PROPOSAL FOR A NEW
NATIONWIDE COMMUNICATIONS
PUBLIC UTILITY SERVICE

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Abstract

This paper proposes a new inexpensive nationwide communications service for the origination, transmittal and delivery of voice and data messages from one telephone to another. Essentially it is a store and forward analog data system tied into the telephone network with arrangements for complete automation. The core of the plan is a voicegram service center(s) including a computer, a switching matrix and auxiliary equipment. One of the unique features is the scheme for automatically billing the calling telephone for the message. It is felt that this is a much needed service with the potential of many billions of messages annually. Patent applications have been filed for the Kraus Voicegram Service.

Introduction

The telephone system in the United States is one of the country's great national resources, probably not fully appreciated by the public. Although the telephone leaves something to be desired in this technological age, being encumbered with the techniques of the 19th Century, it is the best and fastest in the world. Its use for other than POTS (plain old telephone service) is just beginning and one such proposed use of the telephone network - to send voice and data messages rapidly and automatically - is the subject of this paper.

The concept called the Kraus Voicegram Service requires that a nationwide store and forward analog message service be provided in conjunction with the telephone network with the requisite coordinated design to effect automation. Such a service would be a natural supplement to the telephone, since the completion of the telephone message would then not be dependent upon finding:

1. the called telephone not in use;
2. someone present to answer the telephone.

The "ring-no-answers" and the "busies" account for about 40 billion calls annually which are not completed.

Development

A need presently exists for a rapid, accurate and reliable voicegram service for the home, commerce and government. The past several decades in time have seen a decline in

the number of telegrams handled annually from the order of 200 million to the order of 50 million. This decline may be attributed primarily to the development and the expansion of various types of telephone services. Prior to 1946, letter mail was the principal link of communication for the home, business and government communities with the telephone, teletype and telegrams used as less frequent adjuncts to the mail. Today, the telephone has replaced the mail by an overwhelming margin as the principal avenue of communications among people, with the mail and teletype as second and third choices respectively. The telegram is now a relatively rarely used fourth choice since the advent of data and facsimile transmission.

This drastic change in the method of communication among people may be traced to substantial decreases in the time required for achieving local and long distance telephone calls, coupled with an extraordinary improvement in voice transmission and much lower costs. In the years from 1946 to 1955, telephone calls were completed in a time period involving several minutes to several hours, depending on the geographical locations of the calling and called parties. Today, in an era of modern technology, telephone connections may be completed in a time period of the order of 10 seconds for short hauls up to approximately 180 miles, and 17 or 18 seconds for calls exceeding 1000 miles. It is to be noted that the only major change made in recent times to speed up the handling of a telegram is in the use of a telephone to replace the hand delivery of the telegram to the addressee thereof by a messenger boy. It would thus appear to be clear that the use of the telegram for communication in modern society is due for a further decline with a consequent decrease in revenue therefrom.

The development of the Voicegram Service was the result of an attempt to eliminate the time-consuming job of placing a telegram, and the manual and consequently costly translations which take place in the telegraph system. There are usually three manual translations as covered in Figure 1. These are:

1. Translation of the sender's voice message telephone to the originating Western Union Office to a typed message.
2. The translation of the typed message into data form for transmission over the WU facilities.
3. The translation of received message at the terminating WU office to voice by the Western Union operator in delivering the message by telephone.

There is also, of course, a fourth translation by the receiver, who usually translates the telegram received from the WU by telephone to record form.

TODAY'S TELEGRAM
(Telephone to Telephone)

- A. Customer dials Western Union (WU)**
- B. WU** Operator requests
 (a) name, address and telephone number of addressee
 (b) name, address and telephone number of sender
 (c) message (first translation voice to record)
- C. WU** Type to Teletype Transmission (second translation)
- D. WU** Receipt at WU Distant Office
 Dials addressee telephone number
 Record to voice (third translation)
- E. Customer voice to record (fourth translation)**
- NOTES**
1. If telephone is busy or does not answer telegram is mailed and received the next day.
 2. If sender wishes addressee to receive record copy by messenger there is an extra charge.

FIGURE 1

In the beginning of the development work, with the objective of eliminating three manual translations, the following questions arose:

- Why not send a telegram from one telephone to another?
- Why not dial it automatically?
- Why not record the voice message and replay it automatically?
- How to charge for it automatically?
- How to identify calling telephone number automatically?

The questions raised in the development were satisfactorily answered and certain objectives achieved. These objectives were to:

- Provide a much needed new service
- Supplement and partially replace record telegram service
- Improve time delivery
- Insure verbatim delivery of voicegram
- Include personal tone of sender's voice
- Include delivery to a particular person
- Include "multiple address" voicegrams
- Send at request recording of voicegram to sender and/or receiver by mail
- Perform these operations at a cost comparable to that of the charges for a telephone call

Initially, with the absence of touchtone at the customer's telephone, it will be necessary for a manual operator to come in momentarily on the connection in order to request of the sender the "class of message" (i.e., immediate, night letter, particular person) and so record it in the computer. Likewise, on the delivery of a particular person voicegram, the operator will be required to insure the presence of the particular person before the voicegram is delivered.

It further should be appreciated that should the voicegram not be delivered as required as the result of the called telephone being busy or not being answered, the computer would be programmed to try again at appropriate intervals. These intervals could be geared to the degree of urgency of the voicegram; and it is practicable as the telephone system gets more sophisticated to have the called telephone, even if busy, advised by a signal of the fact that a voicegram is waiting.

Operation

The operation of the system from the customer's standpoint is very simple and one automated arrangement is given in Figure 2. It should be appreciated that there are numerous automatic and semi-automatic arrangements which are applicable, depending on the situation in the telephone network. Also, with touchtone generally available at the station, simpler operation of a more sophisticated system is practicable.

OPERATION OF KRAUS VOICEGRAM SYSTEM

1. Sender dials 2 or 3 digits (a prefix similar to those used in international dialing) plus 7 or 10 digit telephone number of called telephone to whom voicegram is to be sent.
2. Call is routed to computer at voicegram center (outside the normal telephone network).
3. Called and calling numbers automatically spilled into computer at the voicegram center.
4. Computer requests voicegram from sender.
5. Sender speaks voicegram which is recorded in computer and hangs up.
6. Computer dials called addressee's telephone.
7. Addressee answers.
8. Computer transmits announcement that voicegram is about to be delivered.
9. Computer transmits voicegram and repeats until called customer hangs up.
10. Computer computes charges and transmits to telephone company for billing to sender telephone number.

Notes: 1. The above represents a simplified, fully automatic system. A more sophisticated system is practicable with touchtone at sender telephone.
 2. Various types of semi-automatic arrangements are practicable before system becomes fully automatic.
 3. Various classes of voicegrams are practicable including:
 delivery at a specified time
 delivery to a particular person
 delivery of a recording of voicegram to sender, to receiver by mail
 delivery of multiple address voicegrams

FIGURE 2

Description of System

One of the important requirements of the system is to record automatically the calling telephone number as well as the called telephone number in the voicegram center. While this could be done by manual means, known as ONI (operator number identification), this method must be considered as a temporary expedient. The method used in the telephone network is illustrated in Figure 3 in connection with the handling of "0" + traffic. The called and the calling numbers are spilled forward to the CAMA (Centralized Automatic Message Accounting) office.

Likewise in the voicegram system, after connection with the voicegram center the called and calling numbers are spilled into the voicegram center as shown in Figure 4, and recorded in the signal pulse registers shown in Figure 5.

The two or three digits, similar to those dialed preceding the called number in international dialing, are interpreted by the originating telephone central office as follows:

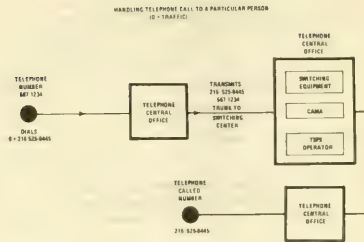
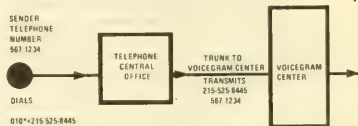


FIGURE 3

DELIVERY AND STORAGE VOICEGRAM TO VOICEGRAM CENTER



*A TYPICAL INTERNATIONAL DIALING PREFIX FOR VOICEGRAM SERVICE

FIGURE 4

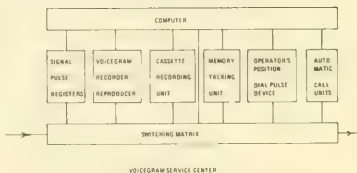


FIGURE 5

1. It recognizes that it is a voicegram call
2. It routes the voicegram call to the voicegram center
3. It spills forward the called and calling numbers to the voicegram center

The voicegram center requires no new hardware and consists of the following basic elements (see Figure 5):

computer
switching matrix
signal pulse registers
voicegram recording and reproducing units
cassette recording units
memory talking units
operator
automatic call units

The functions of each of the above appear self-explanatory. "The operator's position is utilized for one or more functions:

1. Request and record "class of message" from sender
2. Record multiple address (telephone number) voicegrams
3. Insure delivery of particular person voicegrams
4. Provide assistance, quote rates, etc. to the sender

Functions 1 and 2 could be automated with touchtone at the sender's telephone. Likewise, with touchtone the sender would have complete control of the recording and would have available a small library of touchtone instructions such as:

replay voicegram
replay last portion
cancel voicegram
cancel rest of voicegram
add additional words
O.K., send as is

One other feature which is an essential part of the service, although there are certain expedients which could be employed as a substitute, is the delivery to the voicegram center of answer supervision at the called station telephone (see Figure 6). This could be arranged at little cost, would serve to inform the computer when to begin its preliminary message informing the called station that "a voicegram is ready for delivery", and also would furnish start and stop conversation time for charging, although the latter would also be recorded by the telephone central office.

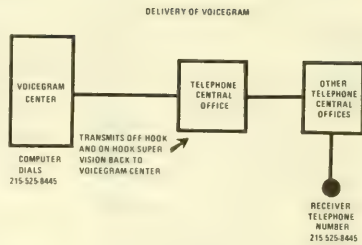


FIGURE 6

Economic Design

General

The details of an economic design of a nationwide (also international) system have not been completely worked out, but the advantages of a single nationwide utility for this service are definitely indicated. Among the advantages are:

1. The provision of inexpensive long haul facilities interconnecting the various voicegram centers.
2. The use of special voice processing techniques to effect economies in the time required to transmit voicegrams. Here further research and development is essential to achieve maximum utilization of the facilities. The transmission between centers could be either analog or digital.
3. Above all, the necessity for absolute standardization of the service nationally is essential to its acceptance by business, industry, government and the general public.

Approximate Costs

The approximate costs shown in Figure 7 are based on a 15 second voicegram, and are typical of costs which can be realized in a medium size metropolitan area with sufficient traffic available to provide a load for a voicegram center. For nationwide service, the cost of the completed toll calls between the terminating voicegram center and the called telephone would need to be added.

VOICEGRAM - Approximate Costs

	Cost Dollars
Incoming switching	\$0.015
Outgoing switching	.015
Computer & recording	.040
Computer, calling & replay	.055
Accounting & billing (Telephone Company)	.010
(Voicegram Center)	.030
Subtotal	\$0.165
Line cost foreign exchange line (local)	.010
Telephone call (for delivery)	.070
Total local Voicegram	\$0.245
Coast to coast Voicegram - add \$0.35	
To particular person - add \$0.35	
For cassette recording to sender - add \$0.85	

FIGURE 7

Potential of Voicegram ServiceGeneral

The potential has been investigated in a number of ways: by comparison with the present telegram service, by a survey of the magnitude of various communications, by consideration of the number of "busies" and "do not answers" in the telephone operations and by a small sampling of customers' needs. Also, it is advisable to consider the residential telephone development.

Comparison - Telegram and Kraus Voicegram

	Telegram	Voicegram
Time to place (15 words)	4 minutes	30 seconds
Time from placing to delivery by telephone	1 hour +	2 minutes or at a specified time
Cost - Local	\$2.75	\$0.25
Cost - Long Haul	\$3.75	\$0.60
Accuracy	Usually some errors in telegram	Absolute accuracy as sent
Tone	Impersonal	Personal tone of sender's voice

Availability of Telephone

For business establishments 100% may be assumed to have a telephone. For residence customers 92% of the households have telephones today (96% in New York and Pennsylvania), and it is estimated that over 99% of the households will have telephones by 1980.

Magnitude of Communications

	Annual Volume	
	1970	1980
Mail - first class excluding bills and checks	16B	20B
Telephone Conversations	130B	180B
Telegrams (excluding mailgrams)	50M	30M

Estimate of Voicegram Potential

	Total	Percent	Voicegrams Potential Range
Telephone "Busies" and "Do Not Answers"	40B	1% to 10%	0.4B - 4.0B
Telegram 1970 Volume	50M		
Voicegram at \$.40		10x to 20x	0.5B - 1.0B
Letters 1970 Volume	16B		
Voicegram at \$.40		5% to 10%	0.8B - 1.6B
New Business and Datagrams		unexplored	
Total Potential 1970 Volume			1.7B - 6.6B
Total Potential 1980 Volume (1970 x 1.42)			2.4B - 9.4B
Dollar Volume 1980 at \$.40 each			\$0.9B - \$3.7B

Examples of the Need for the Voicegram Service

There appears to be a great potential need for the Kraus voicegram service since it is fast, inexpensive and automated. The following are a few typical situations where the Kraus voicegram would be the answer to a problem:

1. Tom has dialed Dick four times in the last hour (he is getting a busy signal). The problem would be solved by a voicegram to Dick as follows: "Please call me, Tom, at 567-1234." This will be delivered promptly after Dick hangs up.
2. John is leaving the office at 5:00 p.m. and Harry cannot be reached. He wants Harry to take the 9:00 a.m. plane to Chicago. He sends a voicegram to Harry's residence telephone explaining the situation to Harry, and has it delivered after 6:30 p.m.
3. Nancy wants to accept a written invitation to dinner but cannot reach the hostess since there is no one at home. She accepts graciously by voicegram and the voicegram is delivered as soon as the hostess arrives home.
4. Tom, in San Francisco at 4:00 p.m., wants to get a message to Dick in his

office in New York. He will not be able to call the next morning. He sends a voicegram to be delivered at 9:15 a.m. the next day in New York.

5. The busy executive at 5:05 p.m. wants to call a meeting of five of his people the next morning at 9:00 a.m. but has difficulty reaching any of them. In three minutes he has sent five voicegrams to their residence telephones arranging the meeting.
6. Replies to letters. A voicegram in reply to a letter would be faster, more expressive, and is much less expensive than a dictated letter which requires dictation, typing, review, correction and signature.

Conclusions

The voicegram service described represents a necessary evolution in communications; it would supplement the telephone, partially replace the telegram, and further supplant mail service. The service must, however, be engineered and operated with the full cooperation of the telephone industry; otherwise, it could jeopardize regular telephone service. It should be appreciated that patent applications have been filed on the Kraus Voicegram Service.

Appendix A

General

Appendix A has been added to the paper in answer to comments. It amplifies the operation as covered in Figure 2, and illustrates how the service may be introduced into various types of offices on a semi-automatic basis in order to avoid making expensive modifications to existing central office equipment.

A practicable, semi-automatic method of operation for panel and crossbar office follows in Figure 8.

SEMI-AUTOMATIC OPERATION **Panel and Crossbar Offices**

1. Customer dials a special 3 digit code ONLY
2. Call is routed to Voicegram Center
3. Calling number is spilled into computer at Voicegram Center
4. Operator comes in on line momentarily and requests:
 - a. CALLED number; then key pulses this into computer
 - b. Class of message; then key pulses this into computer
5. Operator disconnects and computer proceeds as in Step 4 of Fig. 2

FIGURE 8

Other types of semi-automatic operation have been developed to enable the voicegram service to be introduced at once throughout the country.

C. RAYMOND KRAUS
PRESIDENT

CONSULTING COMMUNICATIONS ENGINEERS, INC. □ 845 MOUNT MORO ROAD, VILLANOVA, PENNSYLVANIA 19085 215 575 8445

MORE COMMUNICATIONS FOR THE PUBLIC

C. RAYMOND KRAUS

November 1, 1973

Submitted to IEEE

MORE COMMUNICATIONS FOR THE PUBLIC

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845 Mount Moro Road, Villanova, Pa. 19085 215-525-8445

ABSTRACT

This paper, supplementing previous articles, explores further the communications needs of the public; it reviews the operation of the telephone network and proposes means for improving its performance and extending its functions; it discusses the characteristics of systems designed to fill the enormous time gap between the telephone and the mail, and indicates means for making such systems more practicable and effective.

The operation of the telephone network is considered from the standpoint of the individual's communication objectives. The attitude that the completion of a telephone call is the only objective of the telephone business is a narrow one, and may be compared to the railroads' limited objectives in the transportation business.

A BASIC COMMUNICATIONS NEED

A basic communications need is the exploration in depth of the communications requirements of the individual as part of the general public. There have been many marketing studies made for individual specialized services but, as is customary, the general public's overall needs have been neglected in contrast to those of big business. It is essential to assess the total potential in terms of a variety of types of systems each of which would perform differently relative to information delivery. The potential should be quantified in terms of the time of delivery desired, the relative urgency, the quantity of information to be sent, the necessity for an interchange of information, accuracy of information delivery, need for verification, etc. Relative to the telephone it is unfortunate that the needs for fast, modern, sophisticated service adapted to meet our communities' requirements have been unappreciated and unexplored by both the telephone companies and the regulatory bodies. The question is can the regulatory bodies, including the FCC and the OTP continue to operate satisfactorily on a "seat of the pants" basis.

An objective study would include the potential of a whole family of viable communications services including modern, fast telephone service, one-way messages, record and voice, which are exemplified by the FAXGRAM, VOICEGRAM, SUPERFAXGRAM, MAILGRAM and the SUPERMAILGRAM. Other forwarding services as the TELEVIDEOGRAM should likewise be considered.

Considering the millions of dollars expended by the telephone industry and the billions spent by the Federal Government on research, allocation of several million dollars to investigate the unfilled communications potential of our society would not seem

out of order.

THE TELEPHONE NETWORK

The telephone network provides the most important means of random access communications for the nation and the telephone traffic is growing at a much faster rate than mail, currently the only other means of communication available to the general public. The network may be considered as one large computer system with 122,000,000 ports. This enormous and decentralized complex is operated by its customers by actuating the dials and is available at any time to the instantaneous demands of the telephone users. Meeting the varying and growing demands is an arduous and massive task which the telephone companies perform extremely well considering the fact that they must anticipate needs in advance.

Large fluctuations of the telephone traffic require analysis and instant action by special groups whose job is "network management". These groups are located at national, regional and sectional centers to take action to insure that at times of excessive demand the network will function and a reasonable percentage of the originating calls will continue to flow through the network. It should be noted that network management as an art has been developing over a period of many years and today makes substantial contributions to the overall performance of the computer system under stress.

There is one part of the system, however, which the telephone company does not wholly control. This is the equipment providing the man-machine interface, i.e., the station equipment, and the additional equipment, if any, which is located on the customers' premises. Today, under FCC decisions on Interconnect equipment, the telephone company may or may not be consulted as to the type, quantity and traffic carrying characteristics of such equipment. It is proposed to consider here the effect of this part on the operation of the system as a whole.

There are over 170 billion calls made annually from one port of the computer to another and over 50 billion calls are not completed and not charged for. These are due largely to "busies" (BY) and "do not answers" (DA). It is important to note that a substantial part of the \$85 billion investment in telephone plant is being utilized for calls not completed. The very expensive control equipment is used for the same or even a longer period of time for a wasted call as for one which provides revenue.

A corollary of this conclusion is that a relatively small improvement in the percent "busies" encountered would pay off handsomely in reduced investment. It is suggested that the problem is a joint one with the

customer but that the telephone company must take the initiative.

BUSIES

Busies are currently running from 12 to 15 percent overall and may peak to 20% or more during the busy hour. Some effort has been made sporadically to reduce these. In recent years there has been some leaving the "receiver off the hook" or setting up a telephone connection between two telephones and letting the condition remain. These actions are stimulated by the desire to give the impression that someone is "home" or to give the boss the idea that his secretary is at her post when she is not. The first is taken care of in most common control offices by a timing feature. The second can be solved only by customer cooperation or a usage-sensitive rate structure.

Customer cooperation is very essential in avoiding unusual peaked calling. For example, an advertisement during the Christmas season that children might speak to Santa Claus by dialing a specified number put the telephone system in the downtown area of one city out of business until appeals were made to the public via radio and TV to call off the idea. Emergencies also generate unusual peaks which are taken care of usually by prompt action of the network management teams.

The more usual types of busies result from

1. An inadequate number of central office lines to the customers' premises on multi-line service.
2. Customers with a single central office line.
3. Telephones on Centrex PBX with a single line to the PBX.
4. Poor design of the man-machine interface (the system available to the user at his desk).
5. Inadequate traffic handling capacity at the PBX.
6. Inadequate number of lines to PBX attendant.

With reference to an inadequate number of central office lines, it is usually feasible, but not always, for the telephone company to point out to the customer that callers are being turned away without reaching him and thus sell him on more C.O. lines. This is unnecessary with a Centrex CU package where the telephone company is responsible to provide him with an adequate number of lines. However, there are cases where a customer refuses to contract for more service. There are also the cases in small business where two or more individual lines are furnished with separate numbers without trunk hunting or jump hunting and the caller must try one number after another.

The fastest growing area and a big factor in generating busies are the large progressive corporations. They have gone in for Centrex operation which has done much to speed up the service since "the best operator is no operator". The elimination of the PBX

operator on incoming calls has reduced appreciably the overall "connect time", i.e., the time from end of dialing to the beginning of the ringing signal or the busy signal, but at the same time it has increased very considerably the number of busies encountered. Thus the calling party is penalized by having to dial more frequently. In fact, the PBX with Centrex as currently practiced has created a barrier to communications. Usually a single 7 or 10 digit number is printed on the letterhead and on the business card and the individual's number is broadcast without provision at the PBX for line hunting to another line or routing to an attendant at the PBX when a busy is encountered. Frequently the caller is dialing this one number from across the continent and consistently getting a busy. If the busy persists and the call is urgent, the caller then goes through the process of dialing the 555 number to secure the number of the PBX attendant, dialing for the PBX attendant and finding the extension still busy, asking for the PBX information operator to furnish a nearby extension. Frequently there are inadequate lines to the PBX attendant. These time consuming steps are taken only to find out that the PBX information operator does not know of a telephone near that one called, and furthermore, neither she nor the PBX operator are permitted to take a message for the busy telephone. Thus, a rather effective communications barrier has been erected at the PBX which penalizes the telephone network as well as the calling party. Calls incoming to such Centrex units probably total 20 billion annually, and the number of times such a barrier is encountered must be considerably over 1 billion annually.

THE MAN-MACHINE INTERFACE

The man-machine interface (the system available to the user at his desk) is not designed to engineering standards, but is the result of a compromise between the telephone salesman and someone in the user's organization. There appears to be no generally accepted design procedure except some rule of thumb ideas which the salesman acquires after much experience.

The user is not furnished with a list of the various possibilities from the least expensive and still workable to the most expensive with more service capacity and features. The contrast encountered in the field runs from 0 percent key telephone sets with insufficient lines and no hunting in one large office to another office doing the same work with 100 % key telephone sets with rotary additional lines, dial intercommunication systems, call directors, and loud speaking telephones, etc. Callers rarely encountered busies when dialing the second office, whereas it was frequently difficult to reach a telephone in the first office because of busies. The author is not necessarily recommending the all out provision of equipment and lines. However, it is obvious that the first office was laid out solely to save the most money on one vital part of the telephone system without considering the effect on the economy of business operation. On the other hand, the second office was oversold on telephone service. The answer for both would be a careful consideration of the actual needs from a business operations standpoint. It is important to note

that the second office did not degrade service to the caller nor affect the telephone network whereas the first office penalized the caller and the telephone company because it involved excessive use of the network. What is needed is a comprehensive industry wide practice which relates the man-machine interface with all its manifold arrangements to the specific telephone traffic requirements. Such a practice, firmly grounded on correct engineering principles, should be made available to all interested users in simple form. A brochure should be prepared illustrating the various types and quantities of interfaces and optional services to meet minimum, average, and reasonable maximum grades of service considering the outgoing and incoming traffic to be handled.

REDUCING BUSIES ENCOUNTERED AND BREAKING DOWN THE PBX BARRIERS

Various possibilities for accomplishing appreciable reductions in the busies encountered are listed below. In addition to these, there are other remedies which should be considered seriously in order to break down at once the serious barrier to communications at PBX's which has been erected without regard to the urgent communications needs of the calling customer.

The answer to the problem of busies and don't answers in the business world in the long term is so somewhat radical but is both obvious and sensible. The users are operating the telephone "computer" and if they do not operate it efficiently, they should pay for their contribution toward inefficiency. Reasonable norms should be established for the total number of busies and don't answers and for the peak busies and don't answers encountered per busy hour. Busies and don't answers in excess of the reasonable norm would be charged to the called customer and thus there would be an incentive for the customers to provide adequate means for receiving the called traffic. This would also provide an incentive to insure that PBX systems or a portion thereof would be out of service for a minimum period of time. As the Interconnect market grows, such a charge would appear essential to avoid as much as possible a serious reaction on the network from outages due to customer provided equipment. This traffic reaction on the network is probably more important, in the writer's opinion, than the protection of the network from transmission defects or electrical voltages, but strangely, it has not been stressed by the telephone companies and the regulatory agencies.

A Possibilities for Reducing Busies

1. For single line customers or single line Centrex extensions, the long term answer is the "call waiting" feature. Unfortunately, this will be available only in electronic offices with Centrex CO service or at electronic Centrex CU PBX's. At the current slow rate of replacement of central office entities with electronic offices, it will not be available generally for many years. Hopefully, this will change as the vital needs of the gen-

eral public are recognized. Call waiting service provides a means for the party at the called telephone to handle a second incoming call when he is already busy conversing with a party on a previous call. By means of an audible signal (spurts of tone) the called party is advised that a second call is waiting. He can then excuse himself from the first call and by depressing the hook-switch hold the first calling party and transfer his telephone to the second calling party. In talking to the second calling party he can then make an appropriate decision, such as to ask the second party to hold until he finishes with the first party, in which case he depresses the hook-switch again and temporarily returns to the first party. He could instead advise the second party he will call him back. In this way call waiting avoids a busy and the call by the second calling party is not wasted.

2. Provide a second line for the single-line Centrex stations or single-line business stations with line hunting, or if this is out of the question, encourage all businesses with Centrex to place an alternate telephone number on letterheads and business cards for their personnel. The listing of the Centrex PBX stations in the telephone directory would aid appreciably and probably should be required ultimately, although this is not clearly indicated as yet. Meanwhile, the listing of departments and sub-departments of corporations by telephone number would help the calling customer - to some degree - to penetrate the barriers which these corporations have erected. While the action of listing additional numbers on letterheads or in the directory would not reduce busies, it would assist in removing the communications barrier at the PBX.
3. Provide transfer to an attendant after a specified number of rings on don't answers or after busy is encountered. (This feature has drawbacks since it could present a large amount of traffic to an attendant position which may not be equipped to handle it.) Automatic transfer to an automatic voice recorder is one way to help solve the difficulty.
4. Provide an attendant recall or call-in feature on calls to Centrex PBX extensions so that if BY or DA is encountered, the calling party could bring in the PBX attendant by transmitting a touchtone code. This feature, plus a service-minded attendant, would accomplish much in reducing useless traffic on the network.
5. The means listed above of reducing busies are concerned with the terminating party's equipment and actions. The calling pattern of the originating party should also receive some attention because of sizable contributions to "busies". The persistent and suc-

cessive call attempts made frequently by various callers encountering BY represents an abuse of the telephone network and, in particular, of the common control equipment. Such major contributions toward inefficiency of network operation must be restricted, and to encourage cooperation, a charge will need to be made when abuse is indicated.

B. Breaking Down the Communications Barrier at PBX's

The items listed under busy reduction would also be effective in breaking down the communications barrier at PBX's and meeting in some small degree the objectives of the caller. Other possibilities are:

1. Train the PBX attendant or the information operator in the attitude of service mindedness. Equip the attendant with adequate information so that she can select telephones which are near other busy telephones. Permit her to take short messages such as: "Please tell so-and-so I called"; "Ask Jack to call me"; "Yes" or "No".
2. Install at all sizable PBX's an automatic voice recorder on an extension so that it would be possible to deliver any message, but especially those of importance if the extensions are BY or DA. The number of the extension with the recorder could be disclosed to selected callers to permit recording of messages after business hours.

C. Personnel Location System

One of the areas which has not been adequately covered is the matter of locating the called party on his premises after the telephone call has been completed to the called number. Currently the audio and ^{radio} paging systems are employed but these systems require specific action by the person being paged, and there is a considerable period of time during which the call is held waiting for a response from the paging action which may never be received. What is needed is an inexpensive, reliable and simple personnel location system. This has now been developed utilizing ultrasonic techniques, the transmission characteristics of which are ideally suited to this purpose in contrast to radio means. (Ultrasonic transmissions do not readily penetrate the walls of a room.) Briefly, the individual carries an ultrasonic transponder the size of a fountain pen which responds to a coded signal. Each room is equipped with an inexpensive ultrasonic transmitter and a separate ultrasonic receiver, both of which are connected to a central location by means of a pair of wires. When a call comes in for an individual who is not at this telephone, action by the secretary or PBX attendant transmits a voice frequency code over the network which modulates and activates the transmitter in each room. One particular transponder is activated by this transmission and the presence of this person in a particular room or space is immediately indicated. The telephone in the room can then be rung and the person called to the telephone. A manual method has been described, although it is

possible to automate the process completely by adding sophistication to the PBX. The ultrasonic system is inexpensive, reliable and very workable.

While this personnel location system may not become a major factor in communications, it would serve to reduce the holding time on the calls involved, of which there may be as many as several hundred million annually.

DO NOT ANSWERS (DA)

The quantity of DA's overall is about equivalent to the busies (BY's) - around 25 billion annually - but the number of DA's is somewhat less during busy hours, since business calls are more likely to encounter BY's at this time. However, the effect of a DA on the network is greater than the BY since the caller usually waits for a number of rings, adding an average of around 18 seconds or more to the holding time of the call for which no charge is made.

The problem of DA's may be the lack of facilities to answer a remote telephone, but more usual is the lack of personnel to answer the call. In some cases it is deliberate neglect to answer someone else's telephone. It is also frequently encountered at PBX's where there are insufficient positions or insufficient attendants at the switchboard.

There should be a charge made if the number of DA's become excessive, since the penalty to the network and the other customers utilizing the telephone "computer" is not inconsiderable. Such a charge should apply particularly to business telephones during the important business hours.

The solutions for DA's appear to be:

1. For telephones (either CO lines or PBX extensions), provide an appearance at another telephone where the called telephone will be answered in the absence of the called party.
2. Provide for automatic transfer, after a specified number of rings, to an attendant or to a voice recorder where a message may be taken.
3. The customer may subscribe to telephone answering services. (This uneven type of manual service will be replaced by a more sophisticated arrangement with a mini-computer, concentrator and a display tube at a point distant from the central office.)

FILLING THE TIMEGAP BETWEEN THE TELEPHONE AND THE MAIL

The previous sections are concerned with means of improving the operation of the telephone network. However, the large timegap between the telephone and the mail indicates that the general public urgently needs a new family of one-way services utilizing the

telephone network. Although these have been covered in detail in previous papers (see Bibliography), there is additional information which is applicable.

The VOICEGRAM is a means for delivering a one-way voice message service from one telephone to another. The short message originated at a telephone is relayed automatically to the called telephone by an analog store and forward computer. A 15-second one-way message can be delivered across the continent for \$.50, compared to an uncertain and often inaccurate telegram for \$3.95.

The idea that the telephone network should be utilized only for two-way conversations is an archaic one and does not recognize the vast need for fast one-way voice, data, record and video services for the general public. The telephone network is the only facility which has random access to all of the nation and, accordingly, its utilization for other than telephone calls is in the public interest.

There have been comments made that the VOICEGRAM would be detrimental to the network because computer calling might add appreciably to the number of BY's and DA's. The answer is that a carefully controlled computer program would limit calling because successive calls would be increasingly spaced in time, so as to tend to utilize the unused capacity of the network. This is in severe contrast to the public's persistent and successive calling as exemplified by traffic to 800 number services and to various utilities such as taxicabs, electric companies, railroad ticket offices. The public's call attempts, which represent abuse of the network, are important factors in creating wasteful "busies" and "do not answers" which amount to 50 billion annually. The VOICEGRAM traffic, on the other hand, would generate less of such wasteful traffic than the individual who is impatient to get through. After non-delivery on a limited number of call attempts, the particular VOICEGRAM would be discontinued and the caller advised. Another point is that the long-distance (DDD) network would not be affected because, for reasons of economy, the proposed plan includes transmission of long-distance VOICEGRAMS over segregated facilities between VOICEGRAM centers. The service would also include verification of delivery, if desired, by the caller.

The FAXGRAM (described in Meeting the Public's Communications Needs, C. R. Kraus, IEEE ICC '73), utilizing the telephone network between postoffices, would be operated by the user at the originating end and delivered by the postman at the terminating end. An example of its use is a case of sending an 1,880 word telegram from Philadelphia to Anchorage, Alaska, at a cost of \$295.88. FAXGRAM service would have done the job over the telephone network for \$25. Single-page transmissions would cost no more than a telephone call plus a charge for the use of the terminal equipment. Delivery of an accurate record would be made the next morning.

CONCLUSIONS

The enormous telephone "computer" with its 122 million ports is subject to the instantaneous de-

mands of its users, and a sizable portion of the \$85 billion investment is utilized to make telephone calls which are never completed and not charged for. Means for the reduction of this waste are explored, and it is essential that the cooperation of the telephone customers be secured if progress is to be made. The telephone companies should take the initiative in this action. While in general reasonable cooperation may be expected from industry and business, it may be necessary to expedite their cooperation by making a charge to those customers who contribute more than their share to the inefficiency of operation of this telephone computer.

In addition, the varied and unfilled demands of the general public for person-to-person communications remain unexplored. These involve more sophisticated telephone service supplemented by a whole family of additional one-way services. In-depth studies of the communications needs of the general public, funded by the Federal Government, are essential if progress is to be made. No new communications service has been offered the general public since the invention of the telephone almost 100 years ago.

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III COPIES OF REPLIES



SARKES TARZIAN INC

east hillside drive bloomington indiana 47404

THE PRESIDENT

June 4, 1974

Mr. C. Raymond Kraus, President
 Consulting Commission Engineers, Inc.
 845 Mount Moro Road
 Villanova, Pennsylvania 19085

Dear Mr. Kraus:

Thank you for the informative articles you sent me covering VOICE GRAM. To me VOICE GRAM appears to fill a need between the telephone and telegram. Like all novel ideas it is going to take much time and energy to make it a practical reality. This is especially true since it will require the approval and cooperation of the F.C.C. and the telephone companies as well as the support of the financial and investment communities.

I wish you success in your pioneering effort. We are indebted to the pioneers for many of the blessings we now take for granted.

With best wishes, I am

Sincerely,

Sarkes Tarzian
 Sarkes Tarzian

ST/mm

*Recent recipient of Honorary Doctor of Laws
 from University of Pennsylvania*



COLLEGE OF ENGINEERING
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May 23, 1974

Mr. C. Raymond Kraus
President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Ray:

I sincerely hope that the country will realize, as you have, the definite need for one-way communications services such as your Voice-Gram system. I have on numerous occasions received, in the next day's mail, my copy of an overseas cable, only to find (after it was delivered!) serious errors in it. As I understand it, your system would largely overcome this difficulty by providing the message in one's own voice. I certainly wish you luck.

Sincerely,

Winston E. Kock
Acting Director
Herman Schneider Laboratory of
Basic and Applied Science Research

WEK:jjj

FORMERLY VP RESEARCH - BENDIX

EXEC DIRECTOR - DELL LABORATORIES

INTEL CORPORATION
3065 Bowers Avenue
Santa Clara, California 95051
(408) 246-7501



April 12, 1974

Mr. C. Raymond Kraus
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Ray:

I have just read over your proposals for a national VOICEGRAM service and it sounds like a very good idea to me. If implemented, it would supply a real service.

There are innumerable times when I have had to call back several times to get a message through. The line was either busy or the call was unanswered. VOICEGRAM could have sufficed for the content of the call. I am sure it will mean a great saving of time and money. I hope that you can develop enough interest in this proposal to make it a reality.

Good luck.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Bob", written in dark ink.

Robert N. Noyce
President

jj

UNIVERSITY of PENNSYLVANIA

PHILADELPHIA 19174

Wharton School

April 4, 1974

(215) 594-6852

EZRA S. KRENDEL

Professor of Operations Research

Dr. C. Raymond Kraus, President
Consulting Communications Engineers, Inc.
845 Mount Maro Road
Villanova, PA 19085

Dear Ray,

I have read with great interest the description of the VOICEGRAM in the papers which you sent me.

As you know, I have been involved for some years in a variety of communications studies for the Department of Defense. I am well aware of the many suggestions and modifications of our communications capability which have taken place over the years in an effort to make our defense establishment more responsive and more effective. Your concept of the VOICEGRAM strikes me as a first rate idea for making a "store and forward" capability available to the civilian sector to fill the gap which you so clearly indicate exists between real time telephone conversation and hard copy communication.

I can easily see where such a capability would be of considerable use to me in my role as consultant to various industries and government agencies and how many of my associates, both in these agencies and in the academic world, would find such a capability as VOICEGRAM presents to be a valuable extension of their ability to work productively. As a modest application, the harried traveler en route to his airplane who raises a busy signal on an important call would be delighted to have his message relayed when he was aloft. I'm sure that you as well as I have wished such a service were available.

I would very much like to see the VOICEGRAM realized and I hope that you are able to bring together the financial and other interests needed to bring it about.

Very truly yours,


Ezra S. Krendel

ESK/nei

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PRINCETON, NEW JERSEY 08540

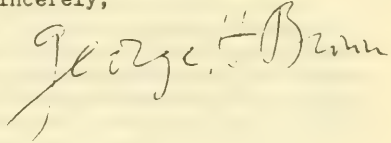
May 3, 1974

Mr. C. Raymond Kraus, President,
Consulting Communications
Engineers, Inc.,
845 Mount Moro Road,
Villanova, Pennsylvania.

Dear Mr. Kraus,

I have studied your reports and proposals for a new family of one-way communications services which include VOICEGRAM and FAXGRAM systems. It is my opinion that your proposals are sound and would go a long way in providing urgently needed services for business and industry as well as for the individual.

Sincerely,

A handwritten signature in dark ink, reading "George H. Brown". The signature is written in a cursive, slightly slanted style. The first name "George" is written in a larger, more prominent script, while "H. Brown" is written in a smaller, more compact script.

FORMERLY

EXECUTIVE VICE PRESIDENT

RCA

STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305

DEPARTMENT OF PHYSICS

May 29, 1974

Mr. C. Raymond Kraus, President
Consulting Communications Engineers, Inc.,
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Mr. Kraus:

VOICEGRAM service could be very useful in many ways. For us on the Pacific Coast, it would help to bridge the awkward three-hour time gap with the Eastern time zone. Internationally, that aspect might be even more important. But, in general, it would be useful whenever there is a need to deliver a message fairly quickly.

I hope that you will succeed in establish
VOICEGRAM service.

Yours sincerely,



Arthur L. Schawlow
Acting Chairman

ALS:fj

CO-INVENTOR WITH CHARLES TOWNES OF THE
LASER

18 Canbury Nash Rd
 Canbury, N. J.
 April 3, 1979

Dear Ray

Your letter of April 1 along with explanatory material about your "Voicegram" system is duly appreciated. A formal answer will await my return from a trip out of the country ending about April 16. I also plan to discuss the subject with some of my old friends still busy at RCA, and will then give you the benefit of their thinking.

Wishing you great success

Wally (W W Watts)

Formerly Executive Vice President RCA

ARMIG G. KANDOIAN
195 ORCHARD PLACE
RIDGEWOOD, N. J.
07480

May 8, 1974

Mr. C. Raymond Kraus
Consulting Communications
Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Ray:

Thank you for your recent letter with information on VOICEGRAM and the family of related one way communication services which you propose and advocate to fill the large gap now existing between standard two way telephone system and the regular mail service.

I couldn't agree with you more as to the size of the gap and the need to provide a variety of economical and reliable one way communication service to the public. The Technology is available and the size of the potential market you estimate I believe to be too conservative.

The question is how rapidly such a service will achieve its potential and of course this depends on many factors including the competence of the entrepreneurs, the available risk capital as well as the regulatory and business impediments and pitfalls such systems will encounter.

Some general cautions ought to be observed so as not to freeze the design and parameters of these new systems too early and also to avoid too heavy a hand on the regulatory side so that fresh new competing ideas will have an opportunity to compete and to be developed in the public interest.

I would also hope and expect that the economies of VOICEGRAM communications would make the charges to the user eventually closer to mail service than to long distance telephone.

With the best personal regards,

Sincerely yours,



Armig G. Kandoian

AGK/lf

**DR. KANDOIAN WAS AT ONE TIME DIRECTOR OF
THE OFFICE OF TELECOMMUNICATIONS OF THE DEPARTMENT OF
COMMERCE. HE IS AN INTERNATIONALLY KNOWN CONSULTANT**

LOREN F. JONES
224 W WILLOW GROVE AVE
PHILADELPHIA PA 19118
PHONE (215) 242 1435

June 18, 1974.

Mr. C. Raymond Kraus, Pres.,
Consulting Communications Engineers, Inc.,
845 Mount Moro Road,
Villanova, Pa. 19085.

Dear Mr. Kraus:

In my opinion your proposed Voicegram service has true merit and could form the basis of a viable and large new business. Having had several decades of experience in evaluating new products and services, including many relating to communications, I find it stimulating and satisfying to encounter this one. It visualizes the need, then devises the means (the invention), a process too often reversed.

The means, the technical aspects, seem to me to present no substantial problems. Admittedly the initial development cost would be large. I do suggest that the system definitely should incorporate the response feature that informs the caller whether his message has in fact reached the recipient.

The need, the size of the market for Voicegram, can not be determined by a typical market survey. Any quantitative projections of the need and eventual demand for the service should be made only after a pilot system is in operation for engineering checks and customer usage analysis. Even then, market projections should make due allowance for the fact that the full markets will emerge only after a period of market development.

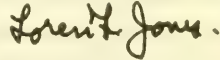
However, my intuitive judgement says that the potential markets are very sizeable, that the system would be sufficiently economical to serve those markets, and that there will be applications by industry and the public beyond those already envisioned. The basic concept is ingenious; it reduces the common telephone frustrations of "busy" and "no answer". These are highly significant inconveniences and users would be willing and desirous to pay reasonable amounts for alleviation.

Your preliminary estimates of costs indicate that they not only would be reasonable, but actually would result in net savings (thru reduction of wasted time) of impressive proportions.

Quite aside from Voicegram's contributions to telephone services, it would have an impact on business mail, too. The cost of a business letter is higher than is generally realized. Its dictation, typing, reading for signature (and sometimes retyping for correction) can easily involve several dollars worth of writer/typist time. Voicegram would be more economical. Although a letter in hard copy is in many cases irreplaceable, a significant part of the business letter market could gravitate to Voicegram because of its economy, speed, convenience, and ability to eventually reach the recipient (like mail).

As for the regulatory, entrepreneurial and A.T.&T. aspects of launching Voicegram, I am not qualified to suggest. A general comment is that the basic merits of Voicegram eventually will prevail over "not invented here" complexes, corporate inertia, politics and investment requirements. Best wishes toward your preparation of a strategy to bring this about.

Sincerely,



Loren F. Jones.

A Fellow of IEEE FORMERLY WITH RCA



COLLEGE OF ENGINEERING AND APPLIED SCIENCE
UNIVERSITY of PENNSYLVANIA
 PHILADELPHIA 19174

Office of the Dean
 TOWNE BUILDING D3

June 11
 19 74

1854-1974
 120 YEARS OF ENGINEERING

Mr. C. Raymond Kraus,
 President,
 Consulting Communications Engineers, Inc.,
 845 Mount Moro Road,
 Villanova, Pennsylvania 19085.

Dear Mr. Kraus:

Thank you for sending me the material relating to methods of communication outside of the telephone system and the postal system.

Although I had not considered specific methods such as those which you describe, I have often--particularly in recent years--felt the need for one-way communication with another person which would be quick, reliable, and inexpensive. I shall list below several examples.

Several times each month I decide that I would like to exchange brief messages with persons I don't like to call on the telephone because I dislike the interruption which unscheduled calls often produce. In such cases it would be most appropriate if I could have the message delivered the same day or the day after and, hopefully, receive a response by the same medium sometime during the second day. Either your VOICEGRAM or your FAXGRAM would be very satisfactory for this purpose.

There is another situation where your methods would be particularly helpful. I often receive telephone calls from prospective employers who ask my opinion about a present or former student, at the request of the student. I have been embarrassed by misunderstanding the name and stating that I do not recall the student, when, in fact, I know the person very well and have agreed to be his reference. I have argued that such requests should always be submitted by mail and that the replies should be a permanent record as well. Once again, either the VOICEGRAM or the FAXGRAM would be entirely satisfactory. I would prefer the FAXGRAM because it involves a permanent record.

Finally, there are occasions when I have wanted to get a quick answer from several persons who are members of a committee of which I am chairman. One of your proposals would be extremely effective in such

Mr. C Raymond Kraus

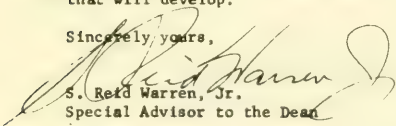
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June 11, 1974

cases, would be either faster or much less costly than the usual methods, and would be less time-consuming for the individuals concerned.

Perhaps these examples will be adequate to convince you that I strongly favor the evolving of all methods of communication of the kind that you have proposed. I sincerely hope that an appropriate effort will be mounted to achieve the objectives of such methods, now known and others that will develop.

Sincerely yours,



S. Reid Warren, Jr.
Special Advisor to the Dean

SRW:IML



University of Colorado
College of Engineering
and Applied Science
Boulder, Colorado 80302

June 4, 1974

Mr. C. Raymond Kraus, President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, PA 19085

Dear Mr. Kraus:

I have looked through the information dealing with the VOICEGRAM which you sent me under cover of your letter of May 23, 1974. The concept is certainly an interesting one and is one which has some good possibilities for development into a useful communications tool.

I wish you the best of success in developing the concept.

Very truly yours,

Max S. Peters
Dean

UNIVERSITY OF CALIFORNIA, SAN DIEGO

BERKELEY DAVIS IRVINE LOS ANGELES RIVERSIDE SAN DIEGO SAN FRANCISCO



SANTA BARBARA SANTA CRUZ

DEPARTMENT OF APPLIED PHYSICS AND INFORMATION SCIENCE

LA JOLLA, CALIFORNIA 92037

5 June 1974

C. Raymond Kraus, President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Mr. Kraus:

In my opinion your proposed Voicegram service would be an excellent means of overcoming a situation in which a telephone fails to answer because of time-zone difference or for any other reason.

Yours sincerely,

A handwritten signature in dark ink, appearing to read "H. G. Booker".

Henry G. Booker

HGB:sp

Internationally Known Scientist

THE FRANKLIN INSTITUTE • PHILADELPHIA, PA 19103 • (215) 448-1146

April 29, 1974

Mr. C. Raymond Kraus
President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Ray:

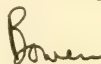
As you know, I have for several months now been aware of your effort to make sure that some of your ideas regarding new communications services become more widely known. I have been attempting to find a way to help in such an effort, but have thus far been unable to determine how I can be of any assistance to you.

I am sorry that I haven't been able to develop any useful ideas, for it is clear to me that your concept of putting existing technology together in novel ways so as to create new and rapid one-way communications systems deserves careful consideration. I am particularly intrigued by the possibilities inherent in your VOICEGRAM concept -- and I hope you will succeed in creating interest on the part of all concerned so that this innovation can be accorded the attention required to determine its viability.

I see no major problems insofar as the technological side of the VOICEGRAM idea is concerned. Since my knowledge of the economics of the communications industry is very primitive, I cannot provide even a well-educated guess as to the degree to which your market and fiscal estimates are likely to prove optimistic or pessimistic.

I am sure you need no encouragement from me to continue your efforts to obtain a "full and fair" hearing on your ideas. You nonetheless have my encouragement -- and my wishes for success as you carry on.

Sincerely yours,



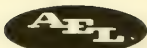
BCD/dap

DR. BOWEN DEES IS PRESIDENT OF THE FRANKLIN

1824-1974

INSTITUTE

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OFFICE OF
THE PRESIDENT

April 9, 1974

Mr. C. Raymond Kraus, President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Ray:

I recently read your Proposal for a New Nationwide
Communications Public Utility Service.

I am writing to you because I became more and more
excited and enthusiastic as I read your proposal. There
is no question in my mind but that this service is both
novel and economical. A company such as ours would make
heavy use and save considerable money if such a service
were available. In addition to saving on our communica-
tions costs, I can also foresee a significant saving in
personnel time by permitting us to utilize the VOICEGRAM
in many cases in lieu of writing a letter.

I also agree that your VOICEGRAM would remove the
unreliability and inaccuracies of sending a telegram.

I am strongly in favor of your new service and would
be happy to repeat my comments to anyone you wish to have
contact me.

Sincerely yours,

Leon Rieberman

LR/cw

AMERICAN ELECTRONIC LABORATORIES, INC
P O BOX 552, LANSDALE, PA. 19446

From the desk of

Apr '74

BEARDSLEY GRAHAM

Dear Ray -

I am in favor
of the new services -
including VOICEGRAM.

Objective studies
have shown for years
that our present system
is obsolete - and
ATT is suing MCI
for monopolizing!

Best
B

Beardsley Graham is an internationally known
consultant on satellite communications and related matters

information and management sciences

April 4, 1974

Mr. C. Raymond Kraus, President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pa. 19085

Subject: VOICEGRAM

Dear Ray:

Thank you for sending me the memoranda and the enclosures on your idea--VOICEGRAM. It's a fascinating proposition and contains many elements of truth as to the lack of innovative ideas in the communication field in the specific areas that you have addressed, i.e., people-to-people communications. This is certainly not true in the whole field of data communications, where literally hundreds of first-class ideas have been brought forth and many implemented.

I can see a need for the VOICEGRAM idea provided the cost is comparable to that of a telephone call of one-minute duration. However, in reading some of the appendages to the description of the VOICEGRAM, the prices there are considerably higher than I anticipated.

The other reservation that I have is the method for implementing this idea, which I have not fully studied, but must confess that as I read the original proposal, a number of methods for implementation came to my mind. However, none of them has been detailed or economically evaluated.

As for Western Union, most of the telegrams I have sent over the past couple of years have been VOICEGRAMS in which Western Union telephones the message to the receiver and they are rarely followed up with copies. If they elected to do VOICEGRAMS, my estimate is that they would be fully qualified in both market and technical ability to create the vehicle to deliver VOICEGRAMS. I'm therefore surprised that they have not been more receptive to your idea.

Hope that some of these thoughts have been of some value to you. Thank you again for the opportunity to review the proposal.

Best personal regards,

Isaac L. Auerbach
President



AUERBACH
121 n. broad st
philadelphia
penna. 19107
215-491-8200
cable auerinfo

philadelphia
washington
new york
london

STATEMENT

BY

ONE BELL SYSTEM EXECUTIVE

"Ray, the VOICEGRAM is so damn simple
nobody thought of it - it's a natural."

Unfortunately, the executive cannot be named.

GEORGE E. BEGGS, JR.
1536 STUCKERT ROAD
WARRINGTON, PA. 18976

215-343-1920

April 8, 1974

Mr. C. Raymond Kraus
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Ray:

I appreciated your letter of March 28 and the data on the VOICEGRAM. I think the time gap problem has been getting steadily worse, particularly as evidenced by the humorous comment on the increase in postal rates, which goes something like this: Postal rates have increased from eight to ten cents because letters are now being held in the postal system not four days but five, a 25% increase in both cases, of course!

I do think the concept of VOICEGRAM is a good one and could be infinitely better than any communications we know to date. I do think your statement, as opposed to the more detailed papers, lacks one thing, and that is the comment on the MAILGRAM by indirection, i.e. "The dying telegram cannot be considered a means, etc. etc." I think some people may feel that Western Union's telegram is still a vital issue in the communications industry and view the MAILGRAM as an adder to an already adequate telegraph service. The MAILGRAM as you point out elsewhere in your data has a corner from which it may operate but it's not the solution that VOICEGRAM could provide.

Keep me posted!

Sincerely yours



Former President - Leeds & Northrup Corp.

michigan technological university



houghton, michigan 49931

college of engineering
department of electrical engineering
906/ 487-2550

April 15, 1974

Mr. C. Raymond Kraus, President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Ray:

I have read the material you sent, and I agree with the basic premise that our communications systems at this time are quite inadequate. The services you mention, particularly the VOICEGRAM and the FAXGRAM, are very interesting additions to the family of communications services with the FAXGRAM in my opinion being the more valuable because of the written record. However, the VOICEGRAM sounds also attractive because of its use of a storing and forwarding computer to do that which so often is frustrating to individuals. I believe in my own work at this somewhat remote location I would find both of these services very useful and cost effective. I should like to be kept informed as plans unfold to introduce some of these improvements.

Sincerely yours,

A handwritten signature in cursive script that reads "Dick".

Richard F. Schwartz
Professor and Head

RFS/rt

Mechanical Engineering
and
Mechanics Department



drexel university • philadelphia 19104 • 215-895-2000

April 16, 1974

Mr. C. Raymond Kraus
President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pa. 19085

Dear Ray:

This is in reply to your request for my comments about the proposed VOICEGRAM service. I would find it very useful both for my academic work and my consulting practice.

As you know, all the students in my graduate program in Engineering Management are employed full-time. Thus, all our classes are given in the evenings. Consequently, my schedule is quite irregular. I have frequent contact with the students but the time urgency is usually not great. Twenty-four hour delay would be satisfactory. I estimate that about one out of five phone calls actually reaches me the first time. During working hours, of course, the students can reach the department office and we try to keep the phone manned. But this is not easy and is expensive for the University. The voicegram would be an ideal solution to this problem.

In so far as my consulting business is concerned, I do not like to use the University phone although at present, the only alternative would be a phone answering service, the cost of which, is really not warranted. Again the proposed Voicegram would solve the problem quite nicely.

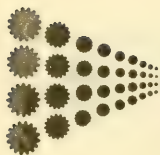
I trust this will be useful to you.

Sincerely,

David B. Smith
D.B. Smith, Director
Engineering Management Program

DBS:mc

DB SMITH WAS FORMERLY VICE PRESIDENT
RESEARCH & ENGINEERING FOR PHILCO CORP. IN PHILA.



Lamont

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April 5, 1974

Mr. C. Raymond Kraus
CONSULTING COMMUNICATIONS ENGINEERS, INC.
845 Mount Moro Road
Villanova, Pa. 19085

Dear Ray:

I was very interested in reading about your VOICEGRAM system and its variations. You have certainly hit upon an area that badly needs attention. Telephoning is great but I find that with the difference in cost between station to station and operator assistance calls we definitely have a problem when we wish merely to give an answer, make a request, transmit some data, etc. This is especially true as our postal service continues to deteriorate.

Your Voicegram system sounds as though it fills a basic and urgent need and we would welcome enthusiastically a solution such as this.

With best regards,

Very truly yours,

LAMONT GEAR COMPANY

Arthur J. Seiler,
President

Dittberner Associates, Inc.*Telecommunications Consultant*OFFICE
TELEPHONE (301) 652-8350

TO:

- EQUIPMENT MANUFACTURERS
- NATIONAL GOVERNMENTS
- BUSINESS & INDUSTRIAL USERS

• EXECUTIVE OFFICES
4500 AUBURN AVENUE
BETHESDA, MARYLAND 20014
TELEPHONE (301) 652-8350

April 2, 1974

Mr. C. Raymond Kraus
President
Consulting Communications Engineers
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Mr. Kraus:

Thank you very much for your note dated 1 April, 1974, enclosing a number of the papers which you have submitted to different conferences, the prospectus for your interconnect seminar, and your request for comments on the record services on an national and international scale.

I personally have been familiar with the concept of store and forward voice message service for considerable amount of time, having suggested to Western Union during consulting assignments to them more than eight years ago. I personally am very much for the concept of the "voicegram", particularly since the amount of time and effort required to deliver the information to Western Union, or the other international record carriers by voice, and get an accurate transcription of it recorded by the telegram or telex operator is both aggravating, and time consuming. I agree that a 1-way voice conversation, in terms of a message delivery service, would be a fully adequate message service for a substantial number of both national and international messages which we now send by telegram or telex. If one were to utilize some degree of voice compression, eliminating long pauses (which can easily be done with modern computer techniques inexpensively), the actual transmission time could likely be reduced by at least 50% over the initial voice transmission time. I, and my firm would fully support the desirability of such a service on a national and a international level.

With regards to the Faxgram, this concept is also very worthwhile, but inherently is less flexible, and requires a greater investment on the part of either the post office, or the common carrier in order to install the necessary number of facsimile devices. I would believe that a store and forward facsimile service, permitting either delivery to the nearest service center, or directly to a user with a technically compatible facsimile machine, would be most desirable. However, there are substantial technical difficulties in terms of technical compatability between existing facsimile devices of different manufacturers. This should be clearly recognized in looking at the economics and viability of such a network.

AFFILIATES IN

PARIS • PHOENIX • LONDON • NEW YORK • STOCKHOLM

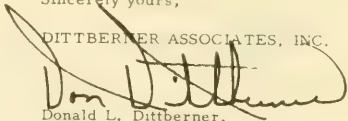
Mr. C. Raymond Kraus
Consulting Communications Engineers
Page Two
April 2, 1964

Hoping that you find these remarks of interest to you, and looking forward to the opportunity of getting together some time soon in Philadelphia to discuss these matters personally.

Best personal regards,

Sincerely yours,

DITTBERNER ASSOCIATES, INC.



Donald L. Dittberner,
President

DLD:smd

A. V. LOUGHREN

April 15, 1974

Mr. C. R. Kraus
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pa. 19085

Dear Mr. Kraus:

Subject: New Communication Services

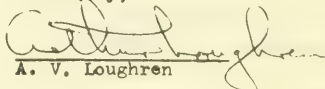
I have read descriptions of VOICEGRAM, FAXGRAM and other potential new communication services, as described by you to the IEEE International Communications Conferences of June 21, 1972 and June 11-13, 1973.

VOICEGRAM seems to me to be an extension of the utility of the telephone which I should be glad to have available. It can fill several real gaps between that which exists and that which one would frequently like to have. The called phone busy, or alternatively unanswered, is an all too common nuisance, especially when the called phone is in a household.

As for FAXGRAM, let me say that the slogan "All first class mail by air" has always left me unimpressed. Obviously, all first class mail important enough to be expedited should go by FAX, and should have started to be so handled twenty or thirty years ago.

How do we - the American public - get these improvements to become available? I hope you can act to this effect.

Sincerely,


A. V. Loughren

AVL/mel

*A. V. Loughren was formerly**Vice President of Hazeltine Corp**Internationally Known consulting engineering firm*



ALCOT

April 4, 1974

Mr. C. Raymond Kraus
President
Consulting Communications Engineers, Inc.
845 Mount Moro Road
Villanova, Pennsylvania 19085

Dear Mr. Kraus:

I have reviewed the material you have sent me on the VOICEGRAM. I know that if such a system existed I would use it, providing, of course, the costs were reasonable. It would be also very useful to have some sort of a printer on the receiver so the message could be typed out since some sort of a permanent record is so often needed. But perhaps the first step is enough to get things started.

Sincerely yours,

Eric A. Walker
Eric A. Walker (RMB)

EAW:RMB

*Dr Walker is member of National Academy
of Engineers & formerly its President
and was President of Penn State University
for 15 years.*

IV RESULTS AND CONCLUSIONS

Of the 50 letters, 26 replies were received. All those replying favored the VOICEGRAM, many enthusiastically. Nine mentioned the FAXGRAM as a needed service; one felt that the proposed form was uneconomical. Four mentioned the unfilled time gap between the telephone and the mail and agreed that new services should be provided to serve the public. Three from the West Coast, in commenting favorably on the VOICEGRAM, pointed out that the VOICEGRAM is urgently needed there because of the three hour time difference across the country.

The conclusions from the preliminary survey are:

1. There is an unanimity of opinion that the VOICEGRAM is urgently needed now.
2. FAXGRAM service is desired, but opinion is not universal.
3. Sufficient data have been developed to support the need for a more elaborate survey.

AMERICAN CAN Co.,
Greenwich, Conn., September 10, 1974.

Mr. GERALD HELLERMAN,
*Special Financial Adviser, Senate Subcommittee on Antitrust and Monopoly,
U.S. Senate, Washington, D.C.*

DEAR MR. HELLERMAN: We are pleased to participate in the activities of the Senate Subcommittee on Antitrust and Monopoly. The attached summary report outlines our activities in three primary areas as follows:

1.—Why American Can Company installed a number of private telephone systems.

2.—Comments on the interface devices as supplied by the common carriers.

3.—Comments on the F.C.C., P.B.X. Advisory Committee.

We hope that these comments prove useful to the Committee.

Very truly yours,

ARTHUR R. BYRNE.

SUMMARY REPORT

Why interconnect and experience to date

The American Can Company is a large user of communication services. In the early 1960's we began a program of evaluation and management of the system of Information Technology, encompassing all phases of the art including voice, written record, and data transmission. We look upon communication facilities, not as a convenience item, but as a valuable tool in the operation of our business. As a result our communication facilities have expanded into one of the larger systems of leased line networks. The traffic generated equates to approximately ten thousand voice calls and thirty million characters of data per day; this in addition to toll and local calling. It is essential to the operation of our business that we have access to modern, efficient, cost effective communication service.

The Carterfone and Specialized Common Carrier decisions appeared to offer a solution to the situation of limited choice in the areas of terminal equipment and transmission facilities. We began a study program to develop a record of present equipment and what we would view as a reasonable upgrade. We found that the service now provided by the carriers (Bell and Independent Telcos) spanned several generations of equipment. We found forty types of equipment which were produced by seventeen manufacturers ranging from the earliest type of step by step to the latest electronic systems.

The result of our study indicated it would be advantageous to proceed with a program of installing privately owned PABX systems for four basic reasons.

1. Reduce cost—A sample of plant installations was taken to establish a representative cross section of the entire company. The ability to purchase offered an attractive return and an ultimate cost reduction of 60%.

2. Stabilize cost—The ability to purchase the equipment eliminated the exposure to rate increases. The rate increase requested by New York Telephone is unusual; however, this is the total of rate increases granted New York Telephone Company over the past five years.

3. Uniformity of Equipment—The wide variety of equipment being supplied by the carriers was posing problems in the design and operation of the network.

4. Utilization of new Technology—Devices to provide accounting details, engineering statistics and performance information, were becoming available. The telephone companies refused to provide this service.

The program was instituted with a test group of seven locations which represented a reasonable sample of the total company.

12/17/72—Naheola, Alabama—A large pulp mill located in rural Alabama, served by an independent telco difficult to install and maintain.

7/27/73—Fairlawn, New Jersey—Engineering Center—heavy traffic—office type area.

9/14/73—Regency, New Jersey—A new plant which will show a sharp growth factor.

11/06/73—Princeton, New Jersey—Research Lab—medium traffic, lab atmosphere—very critical personnel.

12/17/73—Hunting, Long Island—Small Chemical Plant.

4/06/74—Hillside, New Jersey—Large Can Plant—All functions of a larger type of manufacturing facility.

7/06/74—Metuchen, New Jersey—Data Center—Exclusively data processing activity—heavy traffic to all locations—critical that performance be stable.

The market was reviewed and the following suppliers were selected:

Oki Electronics of America, Ft. Lauderdale, Florida—An agreement was reached whereby American Can would supply the engineering specifications and Oki would assemble the unit to our specifications. This allowed us to build in certain safety factors in the traffic handling capabilities of the switch. Arrangements were made with J.A.B. Trucking Company to pick up the unit, which had been pre-tested at Oki and deliver it directly to site. This avoided the possibility of damage during shipment.

North Electric Supply Company, Lenexa, Kansas—Through North we purchased standard telephone instruments manufactured by International Telephone & Telegraph Company, as well as key equipment and miscellaneous items of equipment.

Henkles & McCoy, Blue Bell, Pa.—Installation, labor, wire, cable and necessary hardware were supplied by Henkles & McCoy. Again, we did the cable engineering and terminal distribution so that adequate growth could be built into the system.

The point of concern was the area of on-going maintenance; however, the performance to date has been completely satisfactory. Each area has been contracted on an individual basis and a detailed record of equipment installed and maintenance routine to be followed has been established. Contracts were negotiated with local organizations for this service.

Naheola Collins Radio Service—Demopolis, Alabama; Fairlawn TSSCO—Paterson, New Jersey; Regency TSSCO—Paterson, New Jersey; Hillside TSSCO—Paterson, New Jersey; Princeton TSSCO—Paterson, New Jersey; Metuchen TSSCO—Paterson, New Jersey; and Huntington Telephone Installation & Maintenance—Long Island City.

For the most part, cutovers have been made on time with minimal problems.

INTERFACE DEVICES

In 1970 in its report to the Federal Communication Committee, the National Academy of Sciences stated that uncontrolled interconnection of privately owned equipment presented a possibility of harm to the network in four areas. The carriers, in an effort to protect the network, developed a family of interface devices.

The N.A.S. determined that the possibility of harm existed but were unable to determine the probability of the event occurring. Arguments have raged both pro and con on this subject. It was felt that a program of certification could be established and thereby eliminate the need for protective interface devices. The status of this program will be discussed in the section "PBX Advisory Committee".

Several points are worth mentioning before we review the interface devices themselves.

1. Independent Telephone Companies, some having only four permanent employees and fewer than three hundred subscribers, have been buying a variety of equipment and connecting this to the exchange network without harm to the network. This same equipment, when installed by a private user, must have an interface device.

2. Equipment of most major manufacturers operates at 48 volts with ringing current of 100 volts. The higher voltage is not directed toward the network; however, the possibility exists that it could. Normal network specification calls for voltage no higher than 135 volts be applied. This 30% factor for variation should cover the incidental surges that might occur; therefore, the protection must be for accidental or spurious introduction of foreign voltage. When one considers that telephone cables often occupy poles with electric utility cables carrying high voltage, it could seem that a greater danger exists at that point than in a system which is basically low voltage.

3. It has been stated that telephone companies, being regulated by government agencies, will be careful to assure that no harm comes to the network and an

assumption is made that a private owner will show less concern. From a businessman's viewpoint, it is difficult to visualize a company paying fifty to one hundred thousand dollars for a piece of equipment to perform the vital function of telephone communication and then allowing it to deteriorate to a point where it would harm the network. In all probability service would degrade before this point had been reached.

The interface devices have grown in number and have changed in design and function. We have had experience with three units, namely, CDQ4W, CDH, and VCP on which we will comment.

CDQ4W—This device is the interface used on a private leased line that terminates in a Customer Owned and Maintained Equipment (COAM). Since the early '60's leased lines without interface were provided to interconnect privately owned equipment provided it was customer owned at both ends and did not have access to the exchange network.

The device we use is the CDQ4W which is the termination of a four wire tie line. The applique circuit provides for isolation of the customer equipment from the exchange network should we attempt to use it.

CDH—This device is used as an interface for the local exchange trunk. Originally there was equipment to regenerate and reshape the dial pulses. This resulted in so much trouble that this function was dropped and a simple relay introduced which follows the equipment pulses regardless of condition. It does protect against excessive voltages.

VCP—This device is a voltage sensitive circuit breaker used to protect the interface card from the customer power supply.

In all installations we provide standby power so that in the event of a power failure, the system will continue to function. The telephone company supplies the power to the interface cards through a power pack operating on commercial power. This establishes a condition whereby in the event of a power failure, the internal system continues to function but all tie line and trunk calls are cut off and no service is available on these facilities until power is restored. This condition was deemed unsatisfactory and we proposed that we supply the 24 volts and 48 volts needed for the interface devices. The AT&T Company agreed. We installed a regulator to develop these two voltages and installed a circuit breaker in the power source between our equipment and the interface card. At this point the local telephone company indicated that they require fuse protection on this power source. The resultant configuration has our voltage regulator going through a circuit breaker, then to the telephone company circuit breaker to their network protection device.

An installation interval of fourteen weeks was established and these units are being supplied one at a time on a scheduled basis.

An interesting point to note is the cost of the protective devices as shown on the Huntington bill statement which shows the interface device to be \$9.40 per month and the trunk circuit that is protecting at a cost of \$5.64 per month.

P.B.X. ADVISORY COMMITTEE

The National Academy of Sciences in its report to the Federal Communication Commission stated that uncontrolled interconnection of customer owned equipment posed the possibility of harm to the national network. Protection for the network could be accomplished through the use of protective interface devices or through a carefully planned certification program.

The F.C.C. established the PBX Advisory Committee to establish a program of equipment certification and a procedure for enforcement of the program. The committee was made up of thirty-one members from all segments of the industry. Representatives from AT&T, General Telephone, and other carriers, manufacturers of equipment, users, and state regulatory bodies assembled for the first time in May, 1971. It was determined that the committee would split into two groups—one to establish the procedure for enforcement and the other to establish the technical standards. The committee members indicated which group they would serve on and the group split sixteen and fifteen and work began.

Several approaches were suggested.

1. Since standards had been established already that Bell System Practices be used as the basis for action. This was rejected by AT&T representatives.

2. A "grandfather" condition be established whereby any equipment that was

presently in use by any carrier would be acceptable. This was rejected by AT&T as an oversimplification and not really a certification program at all.

3. A procedure be set up whereby the carrier would inspect and certify the equipment and installation before cutting over the trunks. This was rejected by all carriers as imposing undue burden on them.

4. A technical standard would be written which would define all basic terms and develop a test procedure to detect the presence of conditions that could cause harm. It was agreed that the harms cited by the N.A.S. would be used as a base but not limited to these alone. At the same time a group would be drafting the procedures for enforcement of the program.

The meetings became a series of compromises which resulted in a program so unwieldy that for practical purposes it could not be implemented. In March of 1972, recognizing the fact that a workable certification program had little chance of being developed, a task force was established to set up an interim program which would retain the interface device but would provide for certification of the unit and ownership by the user; thereby eliminating the single largest source of conflict during an installation.

In August, 1972 the sixth and final draft of the certification was submitted.

It is interesting to note that the Dialer Advisory Committee which was formed to develop a certification program for Dealers, Answering, and Conferencing devices also was unable to reach a workable solution in their deliberations.

On April 3, 1973, the FCC released docket #19528 which solicited comments on three interim proposals submitted. They were the Advisory Committee Task Force Proposal, a proposal submitted by NARUC and the Office of Chief Engineer Common Carrier Bureau. This matter is still pending.

A proposal submitted by the Rochester Telephone Company and approved by the New York Public Service Commission has been in operation for some time. This program provides that if standard equipment supplied by a reputable manufacturer is installed, the telephone company will connect its facilities via a simple fuse arrangement. In addition, a simple isolation arrangement is built in. This device is operated from the central office and isolates the customer equipment from the trunk so that trouble can be pinpointed and, in the event of equipment malfunction, the equipment can be removed. This plan has been operational and no harm to the network has been recorded.

TATE COMMUNICATIONS,
Troy Mich., September 16, 1974.

Attention: Gerald Hellerman.

SENATE ANTI-TRUST AND MONOPOLY COMMITTEE,
U.S. Senate,
Washington, D.C.

DEAR MR. HELLERMAN: As an addition to portions of my testimony, I have some more cases to add to your ever-growing list of Bell system harassments and acts of reciprocity.

They are:

Blanche Bekkering Inc. of Flint, Michigan.—Tate Communications had a signed contract and a down payment for two telephone systems for this customer. A letter was sent to Michigan Bell ordering the necessary interface devices. Bell immediately contacted the customer indicating that they (Bell) were not there to discuss the systems sold by Tate Communications, but the two similar telephone systems not yet contracted. The customer was advised that Bell was proposing a 45% to 55% rate decrease on their key telephone systems. The customer now properly "set up" then said, "Well wouldn't this also apply to the systems we contracted for with Tate Communications?" Bell said "yes." The customer cancelled both contracts leaving Tate Communications with the job started and equipment delivered, some of which was unreturnable to the manufacturer.

The Bank of Lansing, Lansing, Michigan.—Tate Communications was adding a branch OPX Key system off of an existing C.O.A.M. PBX. On the day of the cut, the Bell installer said that all of the circuits required Bell repeaters to work properly. However, only two of the four were so equipped. The two circuits without repeaters were unusable for a period of six weeks. Meanwhile Bell was running admittedly erroneous transmission studies. On two occasions, the field Bell people lied to their own "interconnect coordinator" on the claimed installation

of the needed repeaters. During this six week period Bell representatives repeatedly told the customer the "problem" was in the C.O.A.M. equipment. As soon as the repeaters were installed, the system worked perfectly. Tate Communications lost in excess of 40 man hours pursuing the "solution."

The Hartman Group and Amurcon Corporation, both of Southfield, Michigan.—Bell improperly installed their STC interface devices for Amurcon Corporation. After repeated Bell claims that a "hum" on the lines was in the C.O.A.M. equipment, a joint visit with the "interconnect coordinator" showed the cause was an "unfiltered" Bell power supply for the STC's. In making the "corrections," Bell put the neighboring C.O.A.M. system (in the same high rise office building), the Hartman Group, completely out of service for about one-half hour, then put Amurcon out of service for about another one-half hour, then no lines rang in for another one-half hour and then left with at least one line completely out of service. Over this period, 20 C.O. lines were out of service. Bell said, "They forgot to test."

W. J. Doland Assoc., Inc. of Dearborn Heights, Michigan.—This firm does underground trenching work. Both the principal and one other staff member indicated that if they did work for us, Bell told them they would lose their Bell business. It was also indicated that "No way would I turn down business myself without Bell pressure."

If you need more details, please let me know.

Sincerely,

JOHN S. COSGROVE,
JSC/bks.



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